Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Yellowstone National Park's Old Faithful Geyser
Focus:	Nature: Friend or Foe?

Materials:

- White board or chart paper
- White paper
- Pencils, markers/crayons
- 2 liter bottle of diet soda
- Mint Mentos
- Note: the mock geyser demonstration will need to be done **OUTSIDE** on a grassy or dirt area.

Opening

State the objective

Today we will:

See a mock geyser demonstration.

Learn about the Old Faithful geyser in Yellowstone national Park.

Gain prior knowledge by asking students the following questions

Ask students what they know about geysers? Ask them if they have ever opened a soda bottle or can after shaking it up? Ask them what happens when this occurs? Explain that this is similar to a geyser—hot water that "boils" and then sprays out of the ground.

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

Introduce the Old faithful geyser activity to students. Tell them that they will be viewing a mock geyser.

Share geyser facts with students. Have them choose one fact to write down about a geyser and share it with their partner. (More facts can be found at http://www.kidscantravel.com/familyattractions/uppergeyserbasin/funstuffkids/index.html

Geyser Facts

- Geysers are a type of hydrothermal feature just like hot springs, mud pots and fumaroles.
- Like all other hydrothermal features geysers are heated by molten rock called magma far beneath the earth's surface.
- Geysers need three things to form: heat, water, and rock. To erupt, geysers need the right mix of this volatile three.
- Geysers differ from hot springs in one significant way; the cracks in a geyser's rock are too narrow for steam and water to flow.

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

• Geysers erupt hot water and stream but only do so when the pressure is great enough to force hot, underground water through the narrow pipes of the geyser's plumbing system. • Some geysers erupt regularly others rarely erupt. Only six Yellowstone geysers00Old Faithful, Castle, Grand, Great fountain, Daisy and riverside are predicted by park ranges. • Once a hydrothermal feature erupts it is called a geyser yet geysers that no longer erupt are never called anything but a geyser. **Directions:** • Explain to students that you will be going outside to do a demonstration of the Old Faithful geyser in Yellowstone National Park. • Explain to students that the Mentos are going to act as the heat and pressure needed for a geyser, the soda will act as the water, and the bottle will act as the rock opening. • Go outside the grassy or dirt area, have students stand a safe distance from the soda bottle. **THE SODA WILL EXPLODE FROM THE BOTTLE, SO BE SURE TO MOVE AWAY QUICKLY AFTER DROPPING THE SEVERAL MENTOS INTO THE 2 LITER OF SODA**.	When possible, engage students in a "teach to learn" opportunity and have the student become the teacher.
Students Practice ("You do") • Give each student a piece of paper and markers/crayons. • Tell them they will be writing about and drawing a picture of what happened during the geyser demonstration. • Give them time to draw a picture of the geyser demonstration and their favorite fact about geysers. • After they have written down their fact and drawn a picture, have them share their fact with at least five classmates.	

Closing
Review Say: • Please recap what we did today. • Did we achieve our objectives?
Debrief **Likes and Dislikes** Create a chart and list what students liked and what students didn't like about the activity. You might probe by asking, "What about this activity…?"
Reflection (Confirm, Tweak, Aha!) • Ask students to think about what they did today in math. • Ask them to comment on what they did today was something they already knew how to do. (Confirmation) • Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak) • Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

- K-1: Choose age appropriate facts to share with students, taking time to explain difficult terms or using age-appropriate language.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Yosemite National Park Travel Brochure
Focus:	Nature: Friend or Foe?

Materials:

- White board or chart paper
- White paper

Opening

State the objective

Today we will:

- Learn about the waterfalls of Yosemite National Park
- Create a travel brochure for visitors of Yosemite National Park

Gain prior knowledge by asking students the following questions

What if anything do you know about Yosemite National Park? Has anyone been there before? Is it in a desert or a forest? What state is it in? How far from where you live is Yosemite?

Is Yosemite an English or an Indian word? Why do you think what you think?

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

Introduce the Yosemite activity to the students. Tell them that they will be creating their own travel brochure for Yosemite National Park.

Allow students to share stories with class if they have ever been to Yosemite.

Share with students facts about Yosemite: (additional information can be found at http://www.yosemitepark.com/activities_parkskids.aspx

Allow them to discuss as a group things that they would be interested in doing or seeing in Yosemite.

Yosemite Attractions:

Yosemite national Park is located in east central California, east of the city of Modesto, California. A Yosemite icon, the Half Dome is easy to glimpse from around the Yosemite Valley, since the impressive granite crest rises more than 4,500 feet above the valley floor. You can look at Half Dome from a long way away, or you can hike it. If you hike Half Dome it is very serious mountain climbing and can take up to 12 hours. In the summer and on holiday weekends, so many people try to hike half Dome that you would have to wait to climb the last 900 feet. 400 of those feet have steel cable railing to help climbers make it to the top. When it's crowded, you could wait for over an hour to climb that last 900 feet. Half Dome is one of the most popular hikes in Yosemite but to be successful you should be an

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking

When possible, engage students in a "teach to learn" opportunity and have the student become the teacher

experienced climber. Yosemite National Park is happy to teach you how to climb Half dome at the Yosemite Mountaineering School and guide Service. This service has been in Yosemite since 1969. Guides from the Mountaineering Service will take you wherever you want to go. They will teach you how to be a great rock climber. They will teach you how to tie knots and let you have the fun of being a beginner. The Service also helps people climb El Capitan when they are a little more experienced.
Yosemite has 13 campgrounds inside its boundaries, each in a wonderful forest setting where you can sit back and simply enjoy the scenery. You can stay cool by spending some time in the water. Whether you want to fish, or swim, or just wade in the shallow, Yosemite has many rivers and lakes that will suit you just right. You can even rent a river raft and float down the Merced River.

Students Practice ("You do")

- Give each student a piece of paper and crayons/pencils.
- Instruct them to fold the paper into 3 equal sections, like a brochure.
- Tell them they must draw a picture of t and write a caption underneath describing one of the attractions in Yosemite.
- Allow them time to share with the group. They should tell why they picked the attractions that they did.

Closing

Review

Say:

- Please recap what we did today.
- Did we achieve our objectives?

Debrief

Liked Best Next Time (LBNT)

- In this simple debrief, students talk about the activity or the day and share what they enjoyed most and/or what else they would have liked to have done, or what they would have liked to have spent more time on. LBNT allows students to express an opinion about the day.

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:
K-1: Have conversations describing key terms. For example: attraction, camping, etc. Allow them to draw a picture of one thing they would like to do in Yosemite rather than creating a brochure.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Carlsbad Caverns
Focus:	Nature: Friend And Foe

Materials:
- none

Opening

State the objective

Today we will:
- Be introduced to Carlsbad Caverns National Park
- Learn how bats communicate

Gain prior knowledge by asking students, "What do you know about _____?"

- Bats? Have you ever seen one?
- New Mexico? Has anyone ever been there?
- National Parks? Have you ever been to one?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Background Information (Share with students)

- Carlsbad Caverns National Park is in the state of New Mexico. *
- It is known for having a very large cave chamber called The Big Room and for the thousands of bats that call the 116 caves home.
- The Big Room is made out of limestone and is full of stalactites and stalagmites. It is the 7th largest cave chamber in the world. It is almost 4,000 feet long and 350 feet high!

Quick Memory Trick (4-5 grades only)

- StalaCtites- Comes down (Stalactites are the formations that hang down from the ceiling).
- StalaGmites- Grows up (Stalagmites grow up from the ground).

Background Information (Share with students)

- There were an estimated 793,000 bats living in the Carlsbad Caverns in 2005. People from all over come to the Carlsbad Caverns to watch them come out each

Activity → Teachable Moment(s) *throughout

*If you have a United States map available, show students where New Mexico is located.

*Mosquitos are a tasty bat treat. One brown bat can eat up to 3,000 mosquitos night!

night. They all fly out when the sun sets and for about three hours.

Students practice ("You do")

"Bat, Mosquito" Activity

Most bats like the bats that live in the Carlsbad Caverns are nocturnal; they only come out at night to eat. They are also blind. How do you think bats can fly around and find their food when its dark and they can't see? *Bats use echolocation. They send sound waves through the dark and listen for the echo. That is how they know where things are.* The game "Bat, Mosquito" can help illustrate echolocation. *****

- Form a circle in an outdoor area or a large indoor area. Choose 1 person to be the bat. Choose several people to be the mosquitos. Bring these people into the center of the circle. The remaining people will be the edge off the circle and be a tree.
- The bat must keep his eyes closed at all times. The bat will call out (demonstrating the sound wave) "mosquito" and the "mosquitos' must respond "right here"(demonstrating the echo). Continue calling to locate more mosquitoes. The bat should try and tag as many mosquitoes as he can in 2 minutes (add a minute to make it easier, take a minute away for a greater challenge). Once a mosquito is tagged he or she, becomes a tree. If the bat gets too close to the tree, then the trees call out "trees" to steer the bat back into the center. And the end of two minutes, choose a new bat and new mosquitoes.

Play a round or two and then ask these questions:

- In this game, what is representing the sound waves made by the bat? *The bat saying, "mosquitoes"*
- What is representing the echoes back to the bat? *The mosquitoes saying "right here" and the trees saying "trees" if they got too close.*
- What does the echo tell the bat? "*Where something is located."*

Continue to play as time allows, choosing a new bat and new mosquitoes each time.

Closing

Review

- Please recap what we did today.
- Did we accomplish our objectives?

Debrief

Four Step Debrief: This strategy has four steps, each one designed to help the student "connect the dots" between the activity, the learning, and how that learning may be used in their everyday life both immediately and in the future.

Step 1: Describe: Student(s) describe what they did during the activity.

Step 2: Interpret: Students answer one, some or all of the following questions:

What were your key learnings when you participated in this activity?
What skills did you need to utilize to participate in this activity?
How did you feel when participating in this activity?

Step 3: Generalize: How can you use the skills or your key learnings at home?

Step 4: Apply: How can you use the skills or your key learnings at school?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Grand Canyon- Erosion
Focus:	Nature: Friend And Foe

Materials:

- Optional: pictures of the Grand Canyon
- 5 foil pans
- Soil
- Various size of rocks
- Water
- 5 paper cups

Opening

State the objective

Today we will:

- Be introduced to the Grand Canyon
- Do a simple demonstration to see how the Grand Canyon was formed

Gain prior knowledge by asking students, "What do you know about _____?"

- The Grand Canyon?
- Erosion?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Background Information (Share with students)

- The Grand Canyon is in Arizona. * (Show the pictures if available).
- The land around the Grand Canyon is called Grand Canyon National Park.
- The Grand Canyon is 18 miles wide, 277 miles long and up to 1 mile deep.
- How was the Grand Canyon formed? About 17 million years ago, the Colorado River flowed through the giant rock mountains. These millions of years of water erosion created the canyon that we now know today as the Grand Canyon.

Students practice ("You do")

Erosion Experiment

- Arrange students into 5 groups.
- Allow students to gather needed materials. (One by one, give students the

Activity → Teachable Moment(s) *throughout

*If you have a United States map available, show students where Arizona is.

following instructions.)

Directions:

- Fill your foil pan with soil.
- Place small rocks on top of the soil.
- Put two or three books under one side of the foil pan to create an incline.
- Using a paper cup full of water to carefully drip water at the highest part of the foil pan.
- Where does the water flow?
- What happens when it runs into the rocks?
- How does this demonstrate how the Grand Canyon was formed?

Closing

Review

- Please recap what we did today.
- Did we accomplish our objectives?

Debrief

Four Step Debrief: This strategy has four steps, each one designed to help the student "connect the dots" between the activity, the learning, and how that learning may be used in their everyday life both immediately and in the future.

Step 1: Describe: Student(s) describe what they did during the activity.
Step 2: Interpret: Students answer one, some or all of the following questions:
What were your key learnings when you participated in this activity?
What skills did you need to utilize to participate in this activity?
How did you feel when participating in this activity?
Step 3: Generalize: How can you use the skills or your key learnings in your life?
Step 4: Apply: How can you use the skills or your key learnings at school?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification of lesson:

- For younger students, you may want to do a whole class demonstration instead of small groups.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Dinosaur National Monument
Focus:	Nature: Friend And Foe

Materials:

- Optional: Pictures of fossils found in Dinosaur National Monument (Google Search "Dinosaur National Monument pictures")
- Dinosaur fossil pictures or templates
- Pencils and/or markers
- Toothpicks
- Liquid Glue (not glue sticks)
- White copy paper, 1 per student

Opening

State the objective

Today we will:

- Be introduced to the Dinosaur National Monument.
- Learn how fossils are created.
- Make a toothpick dinosaur fossil.

Gain prior knowledge by asking students, "What do you know about _____?"

- Dinosaurs?
- Fossils?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")	***Activity → Teachable Moment(s) *throughout***
Background Information (Share with students) • Dinosaur National Monument is on the border between Colorado and Utah. * • 150 million years ago, dinosaurs were in this area. The Dinosaur national Monument has fossils of several different dinosaurs. Allosuarus, Abydosaurus, and other long-necked, long-tailed dinosaur fossils are found there. (Show the pictures if you have them available). • Fossils are imprints of plants and animals found in rocks. Here is an example of one way fossils are made: A twig falls into wet, sandy ground. A flood leaves more soil on top of the twig, so that it is trapped. Over a lot of year, thousands, the twig decays and disappears. But as the soil hardens into rock, the impression made by	*If you have a United States map available, show students where Colorado and Utah are. What is a border?

the twig is left in the rock. This is what happened to the dinosaurs at Dinosaur National Monument. • The dinosaurs are lying in fossil form, in what are called "bone beds". **Demonstration- Create Your Own Bone Bed** Demonstrate how to trace the dinosaur fossils onto the white paper. Show students how to use the toothpicks to represent the dinosaur bones. • Lay a dinosaur template flat in front of you. Place a single sheet of copy paper over the template. Using a pencil or marker, trace the dinosaur bones. (If the dinosaur bones don't show through the white paper, use a black marker to trace the bones on the template first). • Rub or brush the glue into the traced paper to cover. • Break toothpick to the appropriate sizes to lie over the bone tracings. • When all "bines" have been laid, coat the toothpick dinosaur skeletons with another layer of glue and allow to dry.	
Students practice ("You do") **Creating A Dinosaur Bone Bed** • Allow students to gather needed materials. • Circulate and assist as needed.	

Closing
Review • Please recap what we did today. • Did we accomplish our objectives?
Debrief **Three Whats** Ask the following three "what" questions: 1. What did you enjoy most about this activity? 2. What was the biggest challenge with this activity? 3. What did you learn from the group?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Mesa Verde National Park: Basket Weaving
Focus:	Nature: Friend And Foe

Materials:

- Optional: Pictures of the dwellings built into the sides of the cliffs (Google search "Mesa Verde pictures")
- Scissors for each student
- 1 large sheet of construction paper for each student, various colors
- Strips of construction paper, various colors, cut 1 inch wide and 9 inches long

Opening

State the objective

Today we will:

- Be introduced to Mesa Verde National Park.
- Practice basket weaving like the natives of this area did.

Gain prior knowledge by asking students, "What do you know about _____?"

- Colorado? Do you know where Colorado is?
- Mesas? What is a mesa?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Background Information (Share with students)

- Mesa Verde has been a National Park for 105 years.
- It is located in Colorado. *
- The land is made up of cliffs with flat tops. These tops are called mesas.
- In Spanish, Mesa Verde means "green table". Why do you think they named this area Mesa Verde? (Read the next fact and then ask again!)
- The people who lived in this area 2000 years ago were called the Anasazi. They grew corn on the tops of the cliffs, the mesas. Do you know now why they named this area Mesa Verde or "green tables"?
- At the Mesa Verde National Park, you can see the ruins of homes and villages that the Anasazi built into the sides of the cliffs. (Show pictures if you have them available). *
- The Anasazi women were well known for their basket weaving abilities. They used the many baskets they made to store items, haul food from the mesas and trade for other things they needed. The baskets were woven out of grasses, twigs, roots, and other things they could find in nature.

Demonstration- Paper Weaving

Students will be making a woven paper mat. This type of weaving is how the Anasazi women

Activity → Teachable Moment(s) *throughout

*If you have a United States map available, show students where Colorado is.

*How would life be if you lived on the side of a cliff?

wove their plants and natural items into baskets. Demonstrate the folding, cutting and how to weave 2 or 3 strips using these directions. • Fold one full sheet of construction paper horizontally. • Draw a line one inch parallel to the open edge of the paper. This is the cutting line. Do not cut past this line! • From the fold, make cut up towards the cutting line. Repeat, making the distance between cuts about one inch apart. They don't need to be perfectly strait. A little irregularity will give your paper weaving character! • Unfold paper and lay flat. • Use the colored strips of construction paper to weave the strip over and under, over and under. • Use a second strip and start by weaving under and over, under and over until you reach the end of the strip. This is the same sort of process that the Anasazi women used to weave their baskets! For a visual representation, visit http://www.dickblick.com/lessonplans/paperweaving/	
Students practice ("You do") **Creating Paper Weavings** • Allow students to get the necessary materials and create their woven place mats. Circulate and help as needed.	

Closing
Review • Please recap what we did today. • Did we accomplish our objectives?
Debrief **Liked Best, Next Time (LBNT):** In this simple debrief, students talk about the activity or the day and share what they enjoyed most and/or what else they would have liked to have done, or what they would have liked to have spent more time on.
Reflection (Confirm, Tweak, Aha!) • Ask students to think about what they did today. • Ask them to comment on what they did today was something they already knew how to do. (Confirmation) • Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak) • Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Cave Dwellers: Earth as Our Friend
Focus:	Theme: Nature: Friend or Foe?

Materials:

- White board or chart paper
- White paper
- Markers/Crayons

Opening

State the objective

Today we will:

- Identify how earth is our friend
- Learn about how people have used caves as shelter
- Create our own cave dwelling

Gain prior knowledge by asking students the following questions

What do you know about the different types of homes that people have? (caves, teepees, houses, tents, trailers, etc.)

After making a list of different types of homes, ask students why people would have the home they have. Why did some Indians have teepees, some igloos, some long houses? Ask them what types of houses that they have lived in. Ask them which place that they have lived is their favorite.

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")	*Activity → Teachable Moment(s) *throughout*
Introduce the cave dwelling activity to students. Tell them that they will be designing their own cave dwelling. Brainstorm with the class which types of shelters have been used by people throughout history. Write their responses on the board. Give them facts, by writing on board and verbally discussing. Talk about how Earth has been our friend by providing places for shelter in the form of caves (more information can be found at www.scholastic.com **Cliff Dweller Facts** Cliff dwellers are people who make their homes in shallow natural caves in cliffs and sometime under the cliff overhangs. These shallow caves in the cliffs are a natural shelter and protect the person from the wind and rain. If the cave faces east or south, then in the morning the sun will warm the cave and in the evening, the cave will be cool because the	During the lesson check in with students repeatedly. Check in about what is happening and what they are thinking. Take advantage of any teachable moments. Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking. When possible, engage

sun is not shining directly into the cave. Most cave dwellers lived close to water. They may have lived by a lake, a spring, or a river. They also wanted to live close to ground that they could farm and grow crops on. To protect themselves, cave dwellers had ladders that allowed them to climb up to their homes in the cliffs. Rather than digging hand holds in the rock on the face of the cliff, they would use these ladders because it was so easy to remove the ladder if there was danger. Most of the cliff dwelling could not be reached from the top of the cliff either. Cliff dwellings are found in the American Southwest in Colorado, Utah, New Mexico and Arizona. In Arizona you can visit the cliff dwellings in Canyon de Chelly pronounced Canyon de Shay.	students in a "teach to learn" opportunity and have the student become the teacher.
Students Practice ("You do") • Give each student group a piece of chart paper and markers/crayons. • Have them brainstorm in groups and decide on the design of their cave dwelling (students should think like an architect as they will be designing this living space. • As a group, have them draw their cave dwelling. • Once students have completed their cave dwelling drawing, allow students to present their plan to the class. They should explain the reason they have included certain things (ladders, buckets for water with ropes to pull them up to the cave, etc.	

Closing
Review Say: • Please recap what we did today. • Did we achieve our objectives?
Debrief **Four Step Debrief:** This strategy has four steps, each one designed to help the student "connect the dots" between the activity, the learning, and how that learning may be used in their everyday life both immediately and in the future. **Step 1: Describe:** Students describe what they did during the activity **Step 2: Interpret:** Students answer one, some, or all of the following questions: What were your key learnings when you participated in this activity? What skills did you need to utilize to participate in the activity? How did you feel when participating in this activity? **Step 3: Generalize:** How can you use the skills or your key learnings in your life? **Step 4: Apply:** How can you use the skills or your key learning in your work?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them (Aha!)

Modification:

K-1: Assist them in identifying different types of shelters (homes). Spend more time during the brainstorm session to elaborate on different things people have used for shelter in the past. Help them to identify the things they might want to include in the cave dwelling.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Death Valley Flubber
Focus:	Nature: Friend And Foe

Materials:

- Access to warm water (about 9 cups)
- 6 cups liquid glue (like Elmer's)
- 12 tsp Borax
- Assorted colors of food coloring
- 1 plastic snack baggie per student
- 24 plastic bowls
- 6 plastic spoons for mixing

Opening

State the objective

Today we will:

- Be introduced to the Death Valley
- Use the mineral Borax to create Flubber

Gain prior knowledge by asking students, "What do you know about _____?"

- Death Valley?
- Minerals? The mineral Borax?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Background Information (Share with students)

- Death Valley is the largest national park in the 48 continental United States (all states except Hawaii and Alaska).
- It is located in both California and Nevada.
- It is also the hottest and driest place in the United States. The record temperature in the summer was 134 degrees, recorded 98 years ago.
- It is very common during the summer to reach temperatures of 120 degrees. But, in the winter, during the night, temperatures and go below freezing!
- When people from the East were moving across the lands to get to California to find gold, they stopped in various places in Death Valley. * Some people found gold there, but not much. The mineral that was the most abundant in Death Valley was Borax.

Demonstration- Using Borax to Make Flubber

Activity → Teachable Moment(s) *throughout

*If you have a United States map available, show students where California and Nevada are.

*If you have a United States map, show student the movement from the East to the West.

• In one bowl, mix ¾ cup of warm water with 1 cup of liquid glue and a few drops of food coloring. • In a second bowl, mix 2 teaspoons Borax with ½ cup warm water. • Pour mixture one into mixture two. You shouldn't have to stir, the Flubber will form on its own.	
Students practice ("You do") **Using Borax to Make Flubber** • Arrange students into 5 groups. • Allow students to gather needed materials. • Circulate and assist as needed. Allow students to play with the Flubber and then offer these challenges: • How far can you stretch your Flubber? • What shapes can you make with it? • Can you braid it or make a Flubber rope? • Can you bounce your Flubber? • What other things can you do with the Flubber? Flubber can be split amongst group members and stored in plastic baggies.	

Closing
Review • Please recap what we did today. • Did we accomplish our objectives?
Debrief **WHI?** Ask the following three question: 1. What were some of the questions that came up in your group? 2. How did you go about including everyone? 3. If you were to try this again, what might you do differently?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	National Parks Grand Tour
Focus:	Nature: Friend And Foe

Materials:

- Full sized white construction paper
- Drawing materials: crayons, markers, etc

Opening

State the objective

Today we will:

- Review what we have learned about some of nature's greatest spectacles- our National Parks
- Create a poster to demonstrate our knowledge

Gain prior knowledge by asking students, "What do you know about _____?"

- National Parks? Which national parks have we been introduced to?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Brainstorm:

- What national parks have we learned about? What have we learned about them? (Chart these responses. You may want to refer to past lesson plans for facts).

  Yellowstone National Park
  Yosemite National Park
  Carlsbad Caverns
  Grand Canyon
  Dinosaur National Monument
  Mesa Verde National Park
  Death Valley

Students practice ("You do")

Posters

Students will choose one of the national parks to highlight. Using the information they learned, they will write and illustrate on the construction paper to create a poster to educate

Activity → Teachable Moment(s) *throughout

*If you have a United States map available, show students where Arizona is.

their peers. When posters are complete, hang in a public area.	

Closing
Review • Please recap what we did today. • Did we accomplish our objectives?
Debrief **What's Important About That?:** This strategy allows for the debriefing to take a single student's learning and thinking deeper. Unlike other strategies which encourage the facilitator to get the input of many students, this strategy focuses on one student's opinion and thinking. Students are reminded of what they just participated in. The first question asking students generically, what is important about (that, use the words to describe the activity that was just completed. Ex. If you have just finished your homework time, the student is asked, "What is important about completing your homework?") When one student responds, it is important to listen for what the student says is important about the activity that was just completed. Building on that statement, the question again is "What is important about that (whatever was stated by the student.) This process up to five times, each time taking the child's understanding of what is important to a deeper level. At the end, the facilitator states, "Then what I heard you say is that the importance of (this activity that we just finished) is important because (fill in with the last thing that the student said.

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification of lesson:

- For younger students, you may want to do a whole class to work on a mural rather than individual posters.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Planting A Seed: Earth As Our Friend
Focus:	Nature, Friend or Foe

Materials:

White board or chart paper
Paper towels
Dried beans (pinto, etc.)
Sandwich size plastic baggies

Opening

State the objective

Today we will:

- Identify how earth is our friend
- Learn about different conditions that help in the growth of food
- Start to grow our own seedling

Gain prior knowledge by asking students the following questions

- Soil?
- How to grow food?
- What foods are grown?

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

- Introduce the planting activity to students. Tell them that they will be starting their own seedling from a pinto bean.
- Brainstorm with the class which foods are grown from the soil vs. other sources. Write their responses on the board.
- Give the facts, by writing on board and verbally discussing, about plant growth periods and soil conditions needed for plants to grow.
- Soil makes up the outermost layer of our planet. Most plants need soil in order for them to get the minerals, nutrients, and water that they need in order for the plant to thrive. By adding fertilizers and organic matter to the soil, these components will break down in order to provide food that the plants will absorb through their roots. Most plants need sunlight, water and carbon dioxide to survive and grow. Soil containing nitrogen and phosphorus also provides crucial nutrients to plants.

Students Practice ("You do")

- Give each student a plastic baggie, pinto bean, and 2 paper towels

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

When possible, engage students in a "teach to learn"

• Help them to soak paper towels in water, wrap bean loosely inside, and place in plastic baggie. • Explain to them that the paper towels acts as soil for the bean to eventually sprout. • Once students have completed their seed baggies, allow students to share where they will be placing their baggies at home to help the bean to sprout.	opportunity and have the student become the teacher.

Closing

Review

Say:

- Please recap what we did today.
- Did we achieve our objectives?

Debrief

Four Step Debrief: This strategy has four steps, each one designed to help the student "connect the dots" between the activity, the learning, and how that learning may be used in their everyday life both immediately and in the future.

Step 1: Describe: Students describe what they did during the activity

Step 2: Interpret: Students answer one, some, or all of the following questions:

What were your key learnings when you participated in this activity?

What skills did you need to utilize to participate in the activity?

How did you feel when participating in this activity?

Step 3: Generalize: How can you use the skills or your key learnings in your life?

Step 4: Apply: How can you use the skills or your key learning in your work?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

- K-1: Assist them in identifying foods that are grown. Spend more time during the brainstorm session to elaborate on the weather and soil conditions necessary to grow food.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Earthquake Safety
Focus:	Nature: Friend of Foe?

Materials:

- White board or chart paper
- White paper or index cards (4 per student)

Opening
State the objective Today we will: • Learn about earthquake safety steps. • Participate in a mock earthquake drill.
Gain prior knowledge by asking students the following questions What do you know about earthquakes? Have you ever experienced an earthquake? How did it feel? What did you do to protect yourself?

Content (the "Meat")	
Instruction/Demonstration ("I do" – "We do") • Introduce the earthquake activity to students. Tell them that they will be participating in a mock earthquake drill. • Allow students to share stories with class if they have ever experienced an earthquake. Share with students simple earthquake safety tips: (additional information can be found at http://www.fema.gov/kids/pdf/dycare.pdf Allow them to discuss as a group things that could be done around their homes to make it more earthquake safe. **Prepare Your House and Its Contents:** • Much of the damage caused by earthquakes is to the contents of homes. During the shaking, bookcases topple, objects fall out of cabinets, windows shatter, and hanging or large plants fall. You can reduce damage and injuries by removing, moving and fastening, or latching items that are likely to break, fall over or hurt people. • Go through your home, room by room. Standing in the center of each room, look all around you and imagine which objects or pieces of furniture might fall over or fly through the air. • Move heavy objects to lower shelves. • Attach heavy objects that can't be moved to the desk or table they're sitting on with heavy-duty Velcro.	***Activity → Teachable Moment(s) *throughout*** During the lesson check in with students repeatedly. Check in about what is happening and what they are thinking. Take advantage of any teachable moments. Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking. When possible, engage students in a "teach to learn" opportunity and have the student become the teacher.

- Fasten bookcases and tall cabinets to the wall.
- Move beds and cribs away from windows.
- Explain to students that they will be participating in a mock earthquake drill.
- Write the following earthquake drill steps on the board and have students copy each step on a different index card, or in a different section of a white paper folded into four squares.
  1. **Duck** under a desk or table.
  2. **Stay under cover** until the shaking stops (at least one minute).
  3. If possible, **hold** on to the desk or table leg.
  4. If there aren't enough sturdy pieces of furniture to get under, practice **taking cover next to inside walls**, away from windows, overhead light fixtures and tall pieces of furniture which might topple over when the ground shakes.

Students Practice ("You do")

- Give each student a piece of paper or index cards and pencil.
- Give them time to write the four steps of an earthquake drill on their index cards or paper.
- Go through steps and have them hold up which card correlates to which step. For examples, "What is step one?' The student should hold up the card on which they have written, "Duck under a desk or table:. Repeat several times changing the order of steps.
- Conduct a mock earthquake drill with students actually performing the safety steps.

Closing

Review

Say:

- Please recap what we did today.
- Did we achieve our objectives?

Debrief

Likes and Dislikes

Create a chart and list what students liked and what students didn't like about the activity. You might probe by asking, "What about this activity…"?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

K-1: Take time to explain difficult terms and use age-appropriate language.
Safety steps may be drawn using pictures rather than words.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Volcanoes: Earth as Foe
Focus:	Nature: Friend or Foe?

Materials:

- White board or chart paper
- White paper strips or sentence strips
- Pencils

Opening

State the objective

Today we will:

- Identify how earth is our foe
- Learn about Mt. Saint Helen's volcanic eruption

Gain prior knowledge by asking students the following questions

What do you know about volcanoes? Have you ever seen a picture of a volcano? What did it remind you of? What kind of molten rock erupts or oozes from a volcano? Can you name any volcano?

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

Introduce the volcano activity to students. Tell them that they will be teaching each other about the Mt. Saint Helen's eruption in 1980.

Brainstorm with the class about what a volcanic eruption is. Write their responses on the board.

Bring in a tube of toothpaste. Take off the lid. Gently push on the toothpaste. Tell children that this is what it looks like when lava is gently flowing out of the volcano. Be sure that you have a piece of butcher paper underneath the toothpaste tube. Ask student to watch how the toothpaste leaves the tube when you strike the tube with your fist. Explain that this sort of pressure is what makes the volcano erupt or shoot out its lava and ash.

In simple terms a volcano is a mountain that opens downward to a pool of molten rock (magma) below the surface of the earth. It is a hole in the Earth from which molten rock and gas erupt or ooze.

Note: You could use catsup or mustard packets instead of toothpaste.

Students Practice ("You do")

Give each student group a sentence strip or strip of paper and markers/crayons.

Tell them they will be learning about a volcanic eruption that happened at Mt. Saint Helen.

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

When possible, engage students in a "teach to learn" opportunity and have the student become the teacher.

Have students choose one fact (from the following facts that you have written on the board or sentence strips) about Mt. Saint Helen. Students should write the information onto their strip of paper. More information can be found at http://pubs.usgs.gov/gip/103/

Volcano Facts

- The volcanic ash cloud drifted east across the United States in 3 days and encircle Earth in 15 days.
- St Helen's is located in southwestern Washington State, about 50 miles northeast of Portland, Oregon.
- The eruption cost 57 people their lives and many injuries. Many buildings were buried and more than 200 houses and cabins were destroyed.
- Many animals, including deer, elk and bear were killed.
- Mount St. Helen's began to spew ash and steam. Two craters formed on the volcano and there were avalanches of snow and ice, darkened by ash.
- Part of the volcano collapsed and became a huge landslide that eventually covered an area of about 24 square miles.
- March 20, 1980—A magnitude 4.2 earthquake signaled the reawakening of the volcano after 123 years.
- Within 15 minutes a vertical plume of volcanic ash rose over 80,000 feet.
- Afternoon of May 18, 1980—the dense ash cloud turned daylight into darkness.
- During the past 4,000 years, Mount St. Helen's has erupted more frequently than any other volcano.

Directions:

After they have written down their fact, have them share their fact with a least five classmates.

Once students have completed their sharing, have a whole class share out which fact they found most interesting and why.

Closing

Review

Say:

- Please recap what we did today.
- Did we achieve our objectives?

Debrief

Three Whats

Ask the following three "what" questions:

1. What did you enjoy most about this activity?
2. What was the biggest challenge with this activity?
3. What did you learn from the group?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

K-1: Choose Mount St. Helen's facts that are age-appropriate to use for their sentence strip sharing activity. Have a discussion to help them understand what a volcano is during the brainstorm activity.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Mount Saint Helens
Focus:	Nature: Friend or Foe?

Materials:

- White board or chart paper
- white paper strips or sentence strips
- Pencils

Opening

State the objective

Today we will:

- Identify how earth is our foe
- Learn about Mt. Saint Helen's volcano eruption

Gain prior knowledge by asking students the following questions

What do you know about volcanoes? What does it mean to erupt? Have you ever accidentally stepped on or pushed hard on a catsup packet? Have you ever pushed on a toothpaste tube and had the toothpaste gush out all over? Those are things that erupt. To erupt means to come out with great force. That is what volcanoes do. Molten rock called lave erupts. What do you think it would be like to be around an erupting volcano?

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

- Introduce the volcano activity to students. Tell them that they will be teaching each other about the Mount St. Helen's eruption in 1980.
- Brainstorm with the class what a volcanic eruption is. Write their responses on the board.
- *In simple terms a volcano is a mountain that opens downward to a pool of molten rock (**magma**) below the surface of the earth. It is a hole in the Earth from which molten rock and gas erupt.*

Students Practice ("You do")

- Give each student group a sentence strip or strip of paper and markers/crayons.
- Tell them they will be learning about a volcanic eruption that happened at Mount St.

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

When possible, engage students in a "teach to learn"

Helen. • Have them choose one fact (from the following facts, you may need to write them on the board) about Mount St. Helen to write on their strip of paper.(More information can be found at http://pubs.usgs.gov/gip/103/) • *The volcanic ash cloud drifted east across the United States in 3 days and encircled Earth in 15 days.* • *St. Helen's is located in southwestern Washington State, about 50 miles northeast of Portland, Oregon.* • *The eruption cost 57 lives and many injuries. Many buildings were buried and more than 200 houses and cabins were destroyed.* • *many animals, including dear, elk and bear were killed.* • *Mount St. Helen's began to spew forth ash and steam. Two craters formed on the volcano and there were avalanches of snow and ice, darkened by ash.* • *Part of the volcano collapsed and became a huge landslide that eventually covered an area of about 24 square miles.* • *March 20, 1980—A magnitude 4.2 earthquake signaled the reawakening of the volcano after 123 years.* • *Within 15 minutes, a vertical plume of volcanic ash rose over 80,000 feet.* • *Afternoon of May 18, 1980—The dense ash cloud turned daylight into darkness.* • *During the past 4,000 years, Mount St. Helen's has erupted more frequently than any other volcano.* • After they have written down their fact, have them share their fact with at least five classmates. • Once students have completed their sharing, have a whole class share out which fact they found most interesting and why.	opportunity and have the student become the teacher.

Closing

Review

Say:

- Please recap what we did today.
- Did we achieve our objectives?

Debrief

Three Whats

Ask the following three "what" questions:

- What did you enjoy most about this activity?
- What was the biggest challenge with this activity?
- What did you learn from the group?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

- K-1: Choose Mount St. Helen's facts that are age appropriate to use for their sentence strip sharing activity. Have a discussion to help them understand what a volcano is during the brainstorm activity.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Hurricanes
Focus:	Nature: Friend And Foe

Materials:

- Hand sanitizer

Opening

State the objective

Today we will:

- Learn about the needed elements that create a hurricane
- Conduct a small experiment to demonstrate evaporation
- Move like a hurricane while playing Hurricane Tag

Gain prior knowledge by asking students, "What do you know about _____?"

- Hurricanes? How do they start? Where are they common? How are they named? Are you familiar with any hurricanes you may have seen or heard about on the news? What happened?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Background Information (Share with students)

- A hurricane is also called a typhoon or a cyclone, it just depends on where you live in the world. In the US we call them hurricanes, which are just really huge storms!
- They can be as many as 600 miles wide and have wind speeds of 75-200 miles per hour. *
- Hurricanes begin over the ocean and need really warm waters. The warm water causes more evaporation. The evaporated water makes humid air and clouds, and increases the speed of the hurricanes.
- Hurricanes rotate counter clockwise*. They bring very heavy rain, strong winds, and big waves to land when they move out of the ocean.
- The center of the hurricane is called the eye. It is very calm inside the eye, with light winds and little rain.

Evaporation Mini-Experiment

Put a drop of hand sanitizer on your hands and rub your hands together, as if you were washing your hands.

Activity → Teachable Moment(s) *throughout

* Ask students what things they know of that are this fast (cheetah, airplanes, etc)

*Have students stand up and turn in a counter clockwise direction to make sure they understand the concept

Your hands are now wet, so do your hands feel cooler? Answer: Yes! After waiting a few seconds, are your hands now dry? Answer: Yes! The hand sanitizer evaporated off your hands and your hands felt cool, therefore evaporation is a cooling process! Repeat the steps above, but this tim, move your hands through the air. This simulates the wind. Do your hands feel even colder now? Answer: Yes! -Courtesy of www.weatherwizkids.com- • The evaporation of the warm ocean water adds cool air into the hurricane.	
Students practice ("You do") **Hurricane Tag** To demonstrate the motion of a hurricane, take students outside to play Hurricane Tag. • In a large open area, ask to students to create a circle by holding hands. • Demonstrate the counter clock wise direction for students and have them walk once around the circle in that direction. • Hurricane Tag is played just like regular Tag, except students have to run in the counter clockwise direction in the circle. If a student is tagged by IT, he or she must move to the middle of the hurricane or the "eye" until IT has tagged another player. Only one person is allowed in the eye at a time. Once IT has sent 3 people to the eye, the last person tagged becomes it. • Play for as long as time will allow.	

Closing
Review • Please recap what we did today. • Did we accomplish our objectives?
Debrief **Three Whats** Ask the following three "what" questions: 1. What did you enjoy most about this activity? 2. What was the biggest challenge with this activity? 3. What did you learn from the group?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Water—Cloud Journal
Focus:	Nature: Friend or Foe

Materials:

- White board or chart paper
- Pencils/crayons
- White paper
- Markers

Opening

State the objective

Today we will:

- Learn about different types of clouds.
- Observe clouds and journal about them.

Gain prior knowledge by asking students the following questions

- What do you know about clouds? What colors are clouds? Have you ever looked at a cloud and thought you saw and animal or something else?
- Have you ever noticed how clouds have many different shapes? Have you noticed how it looks like clouds are moving?

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

Introduce the cloud activity to students. Tell them that they will be learning how to recognize different types of clouds and journaling them in their "scientific notebook"/ Brainstorm about what students think clouds could be made of. Write ideas on board and then read the following definition:

What are clouds?

A cloud is a large collection of very tiny droplets of water or ice crystals. The droplets are so small and light that they can float in the air.

Introduce information about clouds by reading it and writing it on the board. (Additional facts can be found a http://www.weatherwizkids.com/weather-clouds.htm) THIS NEEDS TO BE WRITTEN ON THE BOARD IN ADVANCE BECAUSE IT WILL TAKE A LONG TIME TO WRITE/DRAW INFORMATION. YOU COULD ALSO PUT IT ON A CHART.

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

Why do clouds float?

A cloud is made up of liquid water droplets. A cloud forms when the air is heated by the sun. As air rises, it slowly cools down. The air reaches the saturation point and water condenses, forming a cloud. As long as the cloud and the air that its made of is warmer the outside air around it, it floats!

Why do clouds turn gray?

Clouds are made up of tiny water droplets or ice crystals, usually a mixture of both. The water and ice scatter all light, making clouds appear white. If the clouds get thick enough or high enough all the light above does not make it through, so the cloud looks gray or takes on a dark look. Also if there are lots of other clouds around, their shadow can add to the gray of darkness of the cloud.

How are clouds formed?

All air contains water, but near the ground it is usually in the form of an invisible gas called water vapor. When warm air rises, it expands and cools. Cool air can't hold as much water vapor as warm air, so some of the vapor condenses onto tiny pieces of dust that are floating in the air and forms a tiny droplet around each dust particle. When billions of the droplets come together they become a visible cloud.

Why are clouds white?

Clouds are white because they reflect the light of the sun. Light is made up of all of the colors of the rainbow and when you add them all together you get white. The sun appears a yellow color because it sends out more yellow light than any other color. Clouds reflect all the colors the exact same amount, so they look white.

Tell students that they are going to go outside and observe clouds and the journal/draw the clouds they see in the sky.

Students Practice ("You do")

- Give each student a piece of paper and pencil/crayons and instruct them to fold the paper in half labeling the outside "Cloud Journal".
- Take class outside and allow them time to draw, write and journal about the different clouds they see.
- Bring class back inside and allow students to share their observations and journals.

When possible, engage students in a "teach to learn" opportunity and have the student become the teacher.

Closing

Review

Say:

- Please recap what we did today.
- Did we achieve our objectives?

Debrief

Liked Best Next Time (LBNT)

- In this simple debrief, students talk about the activity or the day and share what they enjoyed most and/or what else they would have liked to have done, or what they would have liked to have spent more time on. LBNT allows students to express an opinion about the day.

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

K-1: Have conversations describing key terms. Allow students to journal using pictures and labeling rather than complete sentences.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Drought—Water Conservation
Focus:	Nature: Friend or Foe?

Materials:

- White board or chart paper
- White paper
- Markers/crayons
- Pencils

Opening

State the objective

Today we will:

- Learn about what a drought is
- Choose ways that we can help to conserve water every day

Gain prior knowledge by asking students the following questions

What do you know about a drought? Have you ever seen a puddle after all of the water has evaporated. There is dirt that forms into large clods and has big cracks because the dirt shrinks when it dries.

What would happen at your house if there was no water? How would you shower? What would you drink? Think about trying to survive without water.

For what reasons is rain important?

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

Introduce the drought activity to students. Tell them that they will be learning what a drought is, and ways they can save water in a drought.

Brainstorm about what students think a water drought is and what can happen as a result of drought. Write ideas on board and then read the following information. Have students pair up and explain to one another what a water drought is.

A drought is simply a long period of dry weather (usually a season or more) where less than normal or no precipitation falls. Precipitation is any form of moisture such a rain snow, sleet, etc.

A drought will leave no water for crops to grow, water for animals and humans to drink, and many products to be made.

Introduce information about droughts by reading it and writing it on board. (Additional facts can be found at http://www.state.nj.us/drbc/drougt/kids_whatyou can do.htm. This information needs to be written on the board in advance, because it will take a long time to write/draw information.

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

When possible, engage

You and your family can save hundreds of gallons of water a week be following these simple. **Do's and Don'ts of Water Conservation:** **IN THE BATHROOM** (almost 2/3 of home water use is for toilet flushing and bathing!) **DO** fill the bath tub only halfway and save 10-15 gallons. **DO** take shorter showers and save 3-5 gallons of water a minute. **DON'T** use the toilet as a waste basket. Throw trash in a trash basket and avoid flushing unnecessarily. **DON'T** leave the water running when you brush your teeth or wash your hands or face. Faucets use about 2-3 gallons of water every minute! **IN THE KITCHEN AND LAUNDRY:** **DO** make sure the dishwasher is full before turning it on. Dishwashers use between 8 and 12 gallons of water per load. **DO** make sure your clothes washer is full before turning it on. Each load of laundry usually requires 50 gallons or more of water. **DO** use a bowl of water to clean fruits and vegetables rather than running water over them. Reuse the water in the bowl to water your houseplants. **DO** store drinking water in the refrigerator rather than letting the tap run every time you want a cool glass of water. **DON'T** let the water run when washing dishes. **IN THE GARDEN:** **DO** use a self-closing nozzle on your garden hose. **DO** use native plants in your garden (plants that normally grow in the area you live in and do not need a lot of water or care). **DON'T** water gardens or lawns during the heat of the day. Up to 90% of the water you use is lost through evaporation. **DON'T** use water to clean off your sidewalks or driveways—use a broom and sweep them instead. **REMEMBER:** Never put water down a drain that can be used for something else such as watering a garden or cleaning. Educate and encourage your family, friends, neighbors, and school to practice water conservation. Tell students that they are going to choose 5 ways they can help to conserve water every day.	students in a "teach to learn" opportunity and have the student become the teacher.
Students Practice ("You do") • Give each student a piece of paper and pencil/crayons	

• Have them create a contract committing to help conserve water. It should start out with "I pledge to help conserve water by…", and then list the 5 ways they are pledging to save water daily. • Allow students to share their pledges.	

Closing
Review Say: • Please recap what we did today. • Did we achieve our objectives?
Debrief **Liked Best, Next Time (LBNT)** • In this simple debrief, students talk about the activity or the day and share what they enjoyed most and/or what else they would have liked to have done, or what they would have liked to have spent more time on. LBNT allows students to express an opinion about the day.

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

- K-1: Have conversations describing key terms. Allow students to make one pledge using pictures and labeling, rather than five pledges using complete sentences.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Water: Condensation Experiment
Focus:	Nature: Friend or Foe?

Materials:

- White board or chart paper
- White paper
- Pixie cups (one per student)
- Plastic baggy (one per student)
- Water
- Tape
- Markers

Opening

State the objective

Today we will:

- Learn about how water is our friend.
- Create our own condensation model.

Gain prior knowledge by asking students the following questions

What do you know about water? Other than drinking water, what else can you do with it?

Have you ever seen beads of water form on a surface on a warm day? Have you ever seen a glass "sweat"?

Content (the "Meat")

Instruction/Demonstration ("I do" – "We do")

Introduce the condensation activity to students. Tell them that they will be creating their own model of how condensation works in nature.

Introduce definition of condensation by reading it and writing it on board. (Additional facts can be found at http://www.kidzone.ws/water/)

Condensation:

Water vapor in the air gets cold and changes back into liquid, forming clouds. This is called condensation. You can see the same sort of thing at home…pour a glass of cold water on a hot day and watch what happens. Water forms on the outside of the glass. That water didn't somehow leak through the glass! It actually came from the air. Water vapor in the warm air turns back into liquid when it touches the cold.

Directions:

1. Tell students that they are going to make their own model of condensation.
2. Model activity by pouring a small amount of water into pixie cup, placing it in plastic baggy and sealing it, then taping it to a window that lets in sun, or placing it in a sunny and warm area.

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

When possible, engage students in a "teach to learn"

Students Practice ("You do")	
• Give each student a piece of paper and pencil and instruct them to make their prediction about what will happen to the water inside the plastic bag. • Pass out materials needed for condensation model, and allow them time to create and place in a sunny area. • While waiting for condensation to occur, allow students to share their predications. • Have student observe condensation inside plastic baggy and determine whether their prediction was correct.	opportunity and have the student become the teacher.

Closing

Review

Say:

- Please recap what we did today.
- Did we achieve our objectives?

Debrief

Four Step Debrief: This strategy has four steps, each one designed to help the student "connect the dots" among the activity, the learning, and how that learning may be used in their everyday life both immediately and in the future.

Step 1: Describe: Students describe what they did during the activity

Step 2: Interpret: Students answer one, some, or all of the following questions:

What were your key learnings when you participated in this activity?

What skills did you need to utilize to participate in the activity?

How did you feel when participating in this activity?

Step 3: Generalize: How can you use the skills or your key learnings in your life?

Step 4: Apply: How can you use the skills or your key learning in your work?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today in math.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)

Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification:

K-1: Have conversations describing key terms. For example: prediction, condensation, etc.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	How Wind Effects Animals
Focus:	Nature: Friend And Foe

Materials:
None

Opening

State the objective

Today we will:

- Learn how wind can affect animals
- Learn new facts about various animals

Gain prior knowledge by asking students, "What do you know about _____?"

- What wind can do for an animal? Do you think wind is good or bad for animals?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Background Information (Share with students)

Winds can be good or bad depending on the speed of the wind, the amount of wind and how well you are able to protect yourself from it. For example, wind is good because it carries plant seeds from place. But, wind can also be harmful if it comes in the form of a tornado. Animals are also affected by the wind.

How Wind Effects Animals: True or False Activity

- Give students instructions for participating in the How Wind Effects Animals: True or False.
- Designate one side of the room as the True side and the other as the False side.
- You will read an Animal Fact aloud to students. They will then decide if the fact is true or false. Students will move to the designated side of the room.
- Reveal the answer (true or false) and any other information offered.
- After each answer has been revealed, ask students "Would this animal consider wind to be its friend or its foe? Why?

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.
When possible, engage students in a "teach to learn" opportunity and have the student become the teacher

Students practice ("You do") **"The Effects of Wind on Animals: True of False" Facts** • Cattle and sheep get wind chill when it is cold and the wind is blowing 25 MPH or higher. *(True. Their hair and wool coverings are not effective at protecting them in cold and strong wind.)* • Elk cannot smell. *(False. Elk have a very good sense of smell. They can smell predators on the wind from up to half a mile away.)* • Small insects are swept away by some winds, while birds have the ability to control themselves in wind. *(True. The insects weigh very little while birds have enough weight to avoid being swept away.)* • The pika, a small rabbit like mammal, uses twigs and rocks to fill up the opening to their burrows to protect themselves from the wind. *(True.)* • Cockroaches cannot feel wind because of the hard shell that covers their backs. *(false. Cockroaches are very sensitive to wind. They can feel the slight wind that a predator makes as it approaches them and knows to move away.)* • Some spiders can use the wind to "balloon" themselves to investigate a new place. *(True. The spider can use its thread of silk to anchor itself to its home base. It then lets the wind carry it to a new place.)*	

Closing
Review Say: • Please recap what we did today. • Did we achieve our objectives?
Debrief **Liked Best, Next Time (LBNT):** In this simple debrief, students talk about the activity or the day and share what they enjoyed most and/or what else they would have liked to have done, or what they would have liked to have spent more time on.
Reflection (Confirm, Tweak, Aha!) • Ask students to think about what they did today. • Ask them to comment on what they did today was something they already knew how to do. (Confirmation) • Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak) • Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification of lesson:
To extend this activity, you could find a book at your school's library about one of the animals mentioned above and share it with students.

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Wind As Our Friend- Dispersing Seeds
Focus:	Nature: Friend or Foe

Materials:
Catchers:

- 5 plastic lids
- Hole punch
- Yarn
- Petroleum Jelly

Seed Dispersal Activity

- Seeds of various sizes, shapes and weight

Opening

State the objective

Today we will:

- Discover how wind helps the cycle of nature

Gain prior knowledge by asking students, "What do you know about _____?"

- Seeds? What are they? What do they do? How do seeds travel?
- The wind? In what ways does the wind help us? In what ways does it not help us?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

Background Information (Share with students)

- Wind is invisible. We cannot see it, but we can feel it. Even when it doesn't feel like the wind is blowing the air is always moving. It carries things with it when it moves.

What Is In the Wind? Investigation

Break the class into 5 small groups. Give each group the needed materials to make the Catchers. Demonstrate for students:

- Punch a hole in the lid and string the yarn through. Tie to create a loop for hanging.
- Smear the petroleum jelly onto the lid on both sides.

Activity → Teachable Moment(s) *throughout

During the lesson check in with students repeatedly.

Check in about what is happening and what they are thinking.

Take advantage of any teachable moments.

Stop the class and focus on a student's key learning or understanding. Ask open-ended questions to determine what the rest of the group is thinking.

• Accompany the class outside as each group chooses where to hang their Catchers. • Catchers will remain outside to collect whatever is flying in the wind until the end of the hour. However, you could leave the Catchers out for longer if you like, or if nothing was caught. **Background Information** (Share with students) • Plants provide many advantages and are very important in science and in nature. What are some of the things that plants provide? (plants take in Carbon Dioxide and put out Oxygen for us to breathe; they provide food and building materials; they are made into supplies like paper and glue; they provide shelter and shade for people and animals; some can be used as medicine, etc) • Most plants produce seeds. It is the job of the wind to move the seeds around so that new plants are always growing.	When possible, engage students in a "teach to learn" opportunity and have the student become the teacher.
Students practice ("You do") **Seed Dispersal Activity** • While outside, give each student a few of one of the seeds. If the wind is blowing, have students hold up their hands and letting go to see how the wind disperses them. If it is not, have students hold their hands up to their mouths and blow. Repeat this with several types of seeds, making sure that you are introducing the seed name before you begin each new seed. You may want students to record the name of the seed and the results of how well the wind was able to disperse the seeds. • Once all seeds have been dispersed, discuss the results of the activity. Which seed was dispersed the farthest? Which seeds were hard to pick on the wind? (Generally, the larger or heavier the seed the harder it is to travel on the wind. Light seeds will carry the farthest.)	

Closing
Review • Please recap what we did today. • Did we accomplish our objectives?
Debrief **What's Important About That?:** This strategy allows for the debriefing to take a single student's learning and thinking deeper. Unlike other strategies which encourage the facilitator to get the input of many students, this strategy focuses on one student's opinion and thinking. Students are reminded of what they just participated in. The first question asking students generically, what is important about (that, use the words to describe the activity that was just completed. Ex. If you have just finished your homework time, the student is asked, "What is important about completing your homework?") When one student responds, it is important to listen for what the student says is important about the activity that was just completed. Building on that statement, the question again is "What is important about that (whatever was stated by the student.) This process up to five times, each time taking the child's understanding of what is important to a deeper level. At the end, the facilitator states, "Then what I heard you say is that the importance of (this activity that we just finished) is important because (fill in with the last thing that the student said.

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Consult 4 Kids Lesson Plans

Component:	Theme
Grade Level:	K-5
Lesson Title:	Wind Does Work! – Wind Energy
Focus:	Nature: Friend And Foe

Materials:

- Scissors
- 24 small paper cups (like Dixie drinking cups)
- 5 marking pens (any color)
- 12 strips of stiff, corrugated cardboard -- the same length (like those cut from a cardboard box)
- 5 Rulers
- 5 Staplers
- 6 Pushpins
- 6 pencils with eraser on the end
- 5 stop watches or watches that shows seconds

Opening

State the objective

Today we will:

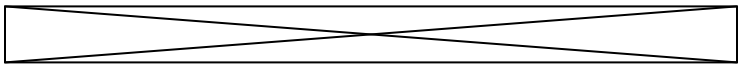
- Learning how wind helps to create electricity
- Make a model anemometer to measure wind speeds

Gain prior knowledge by asking students, "What do you know about _____?"

- Wind energy? How do you think wind can help us make energy?
- Measuring wind? How would you go about measuring something you can't see?

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")	***Activity → Teachable Moment(s) *throughout***
Background Information (Share with students) • Wind does work! Wind turbines create electricity through the movement of air. • A wind turbine has blades like a fan. When the wind blows 14 MPH or more, the blades spin around and the energy created is turned into electricity. • One wind turbine can provide electricity to 1,000 houses per year if the wind conditions are right. • The wind speed has to be above 14MPH to turn the blades fast enough to create electricity.	*Ask students what people or careers would find an anemometer helpful? (weather forecasters, airports, etc). *If there is no wind blowing, students can blow on the anemometer to simulate

• An anemometer is a device that can be used to determine how fast the wind is moving. * **Demonstration** • Choose 1 or 2 students to help you demonstrate how to make a model anemometer. Explain to students that they will be creating a model; it will not be able to give you accurate speeds. But, it will show how people can determine how fast the invisible wind is moving. • Cut off the rolled ends of the paper cups, so it is not so heavy. • Color or mark on 1 of four paper cups with a marker. • Use your pencil and a ruler to draw a straight line from one corner of a cardboard strip to the corner on the opposite side.  • Repeat so that you form an X, like it is shown above. The point in which these two lines meet is the center of the cardboard strip. Repeat with the other piece of cardboard. • Staple a paper cup to each end of the cardboard pieces. (Insert the bottom piece of the stapler into the opening of the cup. Put the end of the cardboard strip on top of the cup. Arrange the cardboard pieces so that are placed perpendicular to the opening of the cup. Make sure all cups face the same way). • Push the pushpin through the center of one cardboard piece and then the other so that they form an "x" held together by the push pin. Push the pushpin with the cardboard pieces on it into the eraser of the pencil. Give the cardboard strips a spin to make sure they spin freely.	wind.
Students practice ("You do") **Creating And Using the Anemometer** • Group the class into 5 smaller groups. Allow each group to gather all needed materials. • Circulate amongst the groups to assist, as needed. • When students have completed making the anemometers, take the outside. • Stick the lead end of the pencil into the grass or soft dirt. • Using your watch, count the number of times the colored cup spins around in one minute. You are measuring the wind speed in revolutions (turns) per minute. Weather forecasters' anemometers convert the revolutions per minute into miles per hour (or kilometers per hour). * • Move your anemometers to another location. Is it windier in other places? Do trees or buildings block the wind? • Measure the wind speed at different times of the day. Is it the same during opening; after homework; before closing? • How many rotations, do you think would equal 14 miles per hour (the amount of wind speed needed to create electricity in wind turbines)? Visit http://www.energyquest.ca.gov/projects/anemometer.html for a picture illustration or more information.	

Closing

Review

- Please recap what we did today.
- Did we accomplish our objectives?

Debrief

Four Step Debrief: This strategy has four steps, each one designed to help the student "connect the dots" between the activity, the learning, and how that learning may be used in their everyday life both immediately and in the future.

Step 1: Describe: Student(s) describe what they did during the activity.
Step 2: Interpret: Students answer one, some or all of the following questions:
What were your key learnings when you participated in this activity?
What skills did you need to utilize to participate in this activity?
How did you feel when participating in this activity?
Step 3: Generalize: How can you use the skills or your key learnings at home?
Step 4: Apply: How can you use the skills or your key learnings at school?

Reflection (Confirm, Tweak, Aha!)

- Ask students to think about what they did today.
- Ask them to comment on what they did today was something they already knew how to do. (Confirmation)
- Ask them to comment on what they did today that was like something they had done before except in one particular way which was new to them. (Tweak)
- Ask them to comment on something (if anything) they have learned today that was brand new to them. (Aha!)

Modification of lesson:

- With younger students, you may want to create the anemometers ahead of time.
- If you are unable to go outside, use modeling clay to form a small hill and stick the lead in of the pencil into the clay. Use the students blowing on it or a fan to simulate wind.