Cloud Trunk Content Checklist (Grades PK-2)

Lesson Plans	Understanding Clouds
Books (Please return these items to the trunk for the next user)	LITTLE CLOUD by Eric Carle CLOUDETTE by Tom Lichtenheld CLOUDS by Marion Dane Bauer and John Wallace CLOUDY WITH A CHANCE OF MEATBALLS by Judi Barrett WHEN CLOUD BECAME A CLOUD by Rob Hodgson
Demonstration Equipment (Please return these items to the trunk for the next user)	Plush cloud Plush raindrop Blue foam floor tiles (set) Foam brushes (set) Plastic baskets (4) 1-inch foam cubes (set) Wooden play food (set) Raincloud bath toy (2) Water wheel bath toy (2) Flat glass marbles (set) Rain-counting cards (set)
Consumable Supplies (Please return unused items to the trunk for the next user)	Shaving cream Elmer's glue Blue construction paper 3-oz. dessert cups & spoons Food coloring
Not Included (We have not included these items because of size, weight, perishability, or they are commonly found in the classroom.)	Blue Jell-O Whipped cream/Cool Whip 2-liter bottle Gravel Water Crayons or markers Paper

LESSON PLANS FOR GRADES PK-2

UNDERSTANDING CLOUDS

Mix & match stand-alone lessons designed for small groups or stations

TEACHER BACKGROUND SHEET

This series of short lessons is designed to spark curiosity about clouds and rain. Students are encouraged to learn through play, wonderment and meaning-making. Weather impacts everyone in a community, and clouds (or the absence of clouds) are Earth science phenomena that are part of students' daily lives.

Lessons can stand alone but are meant to complement each other for a more comprehensive approach that incoporates multiple subject areas. You may wish to teach one or two lessons, or try them all! However, we suggest you start the unit by allowing students to go outside and gaze at the sky. Record what they notice, and allow them to answer their own questions through investigative prompts in the lessons.

Basic weather concepts repeated throughout the lessons include:

- What are clouds made out of?
- How do clouds form?
- Why do clouds look different? Can we categorize them?
- Where does rain come from?
- What are some characteristics of water?
- Why is water important?
- What is the shape of a raindrop?
- Why do some clouds produce rain and others do not?

PLEASE GIVE US YOUR FEEDBACK

Help us improve this traveling trunk by completing this short survey. Your input matters and will help us better serve other teachers and students. Scan the QR code or visit http://bit.ly/ciwro_clouds

Questions about this trunk? Email annette.price@ou.edu

Find more weather lesson resources at https://ciwro.ou.edu/outreach

NORMAN FIELD TRIP OPPORTUNITIES

National Weather Center tours: www.ou.edu/nwc/visit/tours
National Weather Festival: www.ou.edu/nwc/nwf
National Weather Museum and Science Center: https://nationalweathermuseum.com/

LESSON PLAN FOR GRADES PK-2

UNDERSTANDING CLOUDS

LANGUAGE ARTS: LITTLE CLOUD by Eric Carle **READ-ALOUD**

Students will **articulate** the artistic characteristics of clouds.
Students will **explain** precipitation can occur when clouds join together.
Students will **discuss** the advantages of teamwork.

Discussion questions. Students may speak when they are holding the plush cloud.

- What shapes did Little Cloud take? What cloud shapes have you seen in the sky? (*Even little clouds can be anything they want to be! Little cloud used its imagination to create art.*)
- Where does rain come from? (*Fluffy-looking clouds are called cumulus; when they turn gray and produce rain, they are called cumulonimbus clouds.*)
- Clouds become bigger by joining together and becoming a team. How can you work with others to make a big impact?

OAS ELA: Listening. Speaking. Reading. OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect.

SCIENCE: CLOUD WATCHING **ACTIVITY**

Students will **observe** clouds in the sky.
Students will **communicate** shapes and objects through artwork.
Students will **measure** poll results with a graph.

On a day with clouds, ask students to lie on the grass and gaze at the sky -- take a blanket or towel if you like! Students should not look directly at the sun. Encourage students to use their imaginations to describe what they see. Record the students' ideas and take pictures of the clouds. Back inside, project the cloud pictures to a SMART or dry-erase board for the class and ask students to "finish" the drawing of the cloud for the class to illustrate the object they saw. Advanced students can calculate the most popular shapes by creating a bar graph.

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect. OAS ELA: Phonics and Word Study. OAS MATH: Mathematical and Real-World Connections. OAS VISUAL ARTS: Creative Process. Production. Cultural Perspectives.

ART: 'PUFFY-PAINT' CLOUDS **ACTIVITY**

Students will **explore** texture and shapes to **create** cloud art.
Students will **compare/contrast** their creations to realistic clouds.
Students will **explain** their art to others.

Mix 3 parts shaving cream and 1 part Elmer's glue. On blue construction paper, let children create their own cumulus clouds! Paint with fingers or foam brushes. Talk about the texture and color of the clouds compared to what they see in the sky. Do their clouds have identifiable shapes? Are they big or small?

Explain that clouds are made of water drops and tiny particles in the air called aerosols, which is different from the puffy paint. Planes can fly directly through clouds!

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. OAS VISUAL ARTS: Creative Process. Production. Respect for Personal Artwork and the Artwork of Others.

LESSON PLANS FOR GRADES PK-2

UNDERSTANDING CLOUDS

Mix & match stand-alone lessons designed for small groups or stations

LANGUAGE ARTS: CLOUDETTE by Tom Lichtenheld **READ-ALOUD**

Students will **identify** types of clouds.
Students will **explain** idioms.
Students will **propose** solutions to help others.

Discussion questions. Students may speak when they are holding the plush cloud.

- Cloudette made a big difference for the frogs in the pond. How? What can you do that affects your community?
- Cloudette was small. Clouds get bigger by joining together and becoming a team. How can we work together to accomplish big things?
- How is this book true? (*Stormclouds produce rain. Wind moves clouds.*) How is this book not true? Can clouds really hold their breath? Do clouds have faces?
- What types of clouds are in this book? (*Puffy clouds are called "cumulus" clouds. "Higher-up" clouds are streaky and called "cirrus" clouds. Clouds produce rain – when they turn gray, they are called "cumulo-nimbus" clouds.*)
- What did the author mean by "it's raining cats and dogs?"

OAS ELA: Listening. Speaking. Reading. Phonics and Word Study (decoding).
OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect.

P.E.: PUDDLE JUMPING **ACTIVITY**

Students will investigate the effect of rain on the Earth's surface.
Students will engage gross motor skills.
Students will distinguish words and letters.

Outdoors: After it has rained, ask students to jump over puddles. Where do the puddles come from? Why do they form in some places but not others? Where do the puddles go when the sun comes out? **Indoors:** Students will jump from one blue foam floor tile to another. Did they jump and land with control? Students can jump to the specific letter or sight word you call out.

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Cause and Effect. OAS P.E.: Motor Skills and Movement Patterns. OAS ELA: Fluency. Reading and Writing Processes.

SCIENCE: CLOUD PARFAITS **ACTIVITY**

Students will **create** a model of clouds and sky.
Students will **produce** different types of clouds with whipped cream.
Students will **observe** and **describe** sights, sounds smells and taste from their models.

Start by placing a small amount of blue Jell-O into a 3-oz. dessert cup. Add whipped cream or Cool Whip "clouds" with a spoon. Encourage children to try to make cumulus, stratus or cirrus clouds. Fill in with more Jell-O and whipped cream to create a sky scene. Ask children to observe with all five senses before devouring.

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns.
OAS VISUAL ARTS: Creative Process. Production.

LESSON PLAN FOR GRADES PK-2

UNDERSTANDING CLOUDS

LANGUAGE ARTS: CLOUDS by Marion Dane Bauer and John Wallace **READ-ALOUD**

Students will **identify** different types of clouds and **discuss** what they look like.
Students will **explain** why rain occurs.
Students will **discuss** why clouds are helpful to Earth, plants, animals and people.

Discussion questions. Students may speak when they are holding the plush cloud.

- Have you ever made a cloud by breathing on cold day?
- Have you ever walked through a cloud (*fog*)?
- What is cirrus? (*Cirrus means "curl." They are wispy clouds high in the sky.*)
- What is stratus? (*Stratus means "layered" or "spread out."*)
- What is cumulus? (*Cumulus means "heap" or "pile."*)
- What are clouds made out of? (*water drops or ice crystals*)
- How are clouds helpful to us? (*Shade to keep us cool, blanket at night to keep us warm, rain and snow to give us water*)

OAS ELA: Listening. Speaking. Reading. Phonics and Word Study (decoding).
OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect.

MATH: RAIN GAUGES **ACTIVITY**

Students will **simulate** a rainstorm.
Students will **calculate** "rain" with "rain gauges."
Students will **capture** actual rain measurements.

Fill a plastic basket with foam cubes, and place 3 other baskets on the floor. Toss the foam cubes up in the air to simulate "rain." Next, have students count the cubes in the baskets, which act like rain gauges. How do the rain measurements differ by location? Advanced students can calculate the average rainfall in the area with data from all baskets. Make your own rain gauge by cutting an empty 2-liter bottle and putting gravel in the bottom to prevent tipping.

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect.
OAS MATH: Mathematical and Real-World Connections.

SCIENCE: SATURATION **ACTIVITY**

Students will **create** a model of a raining cloud.
Students will **experiment** with falling "rain."
Students will **investigate** the meaning of saturation.

Rinse out 3-oz. dessert cups from CLOUD PARFAIT activity. Fill a dessert cup halfway with water. Spray shaving cream on top of the water. That's the "cloud!" Slowly drop food coloring on top the cloud and keep an eye on the water below. When the "cloud" gets too heavy to hold the food coloring, colored "rain" will start falling into the water. Do not eat. (*In the atmosphere, clouds are made up of water drops. When the droplets combine and get bigger, they eventually get too big to stay suspended in the sky and fall as precipitation.*)

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect.

LESSON PLAN FOR GRADES PK-2

UNDERSTANDING CLOUDS

LANGUAGE ARTS: CLOUDY WITH A CHANCE OF MEATBALLS by Judi Barrett **READ-ALOUD**

Students will **devise** new details for the story.
Students will **distinguish** real types of precipitation from fictional precipitation.
Students will **discuss** and **debate** idioms.

Discussion questions. Students may speak when they are holding the plush cloud.

- Grandpa told a "tall tale" about the town of Chewandswallow. What is a tall tale? When is it OK to create a tall tale?
- If food really fell from the sky, what would you hope is on the menu?
- Certain foods caused problems for the town. What others food do you think would have been trouble?
- What types of things have you seen fall from the sky? (*Rain, snow, hail and freezing rain are all different forms of precipitation.*)
- Can you drink rain that falls from the sky? (*Rainwater needs to be treated by professionals before it is safe for people to drink. However, rainwater is safe for plants to drink.*)

OAS ELA: Listening. Speaking. Reading. Phonics and Word Study (decoding).
OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect.

SCIENCE: SHAPE OF RAINDROPS **ACTIVITY**

Students will **compare/contrast** the shapes of foods with shape names encountered in school.
Students will **select** the true shape of raindrops.

Lay out the wooden play food for children to see and touch.

Everyone knows food doesn't rain out of the sky, but raindrops aren't the shape of teardrops like we see in picture books. Ask the children to guess what food shape is the same shape as a raindrop.

(*A raindrop is an oblate spheroid, the same shape as the top of a **hamburger bun**! It starts out as a sphere, but as the drop grows bigger and falls, it encounters air pressure from underneath, flattening the bottom.*)

OAS SCIENCE: Earth and Space Science. Constructing Explanations and Designing Solutions. Cause and Effect.
OAS MATH: Mathematical and Real-World Connections. Translate Ideas Mathmatically.

ART: BREAD IN THE SKY? **ACTIVITY**

Students will **distinguish** real shapes of raindrops from the common artistic depiction.
Students will **create** realistic art of raindrops.
Students will **illustrate** correct rainwear.

Pass around the plush raindrop. It is a myth that raindrops are shaped like teardrops! (*A raindrop is an oblate spheroid, the same shape as the top of a **hamburger bun**! It starts out as a sphere, but as it falls, it encounters more air pressure from underneath, flattening the bottom.*) Take turns squashing the raindrop into the correct shape.

Ask children to draw a realistic stormy day with crayons or markers on paper. What color/shape are the clouds? What shape are the raindrops? What are people wearing and holding to stay dry?

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect. OAS VISUAL ARTS: Creative Process. Production. Cultural Perspectives.

LESSON PLAN FOR GRADES PK-2

UNDERSTANDING CLOUDS

LANGUAGE ARTS: WHEN CLOUD BECAME A CLOUD by Rob Hodgson **READ-ALOUD**

Students will **explain** how clouds form.
Students will **describe** the water cycle in brief.
Students will **summarize** how clouds relate to precipitation and thunder and lightning.
Discussion questions. Students may speak when they are holding the plush cloud.

- What is Cloud made out of? (*water droplets mixed with dust particles in the air*)
- How does Cloud travel to new places? (*wind*)
- What happens when the water droplets in the cloud freeze? (*They become ice crystals*)
- If they become too heavy, what happens? (*It snows*)
- What does Cloud call herself when she is very low to the ground? (*fog*)
- Where does Cloud get her water droplets from? (*This is called evaporation and transpiration*)
- What happens when Cloud is very full of large water droplets? (*Cloud turns gray and produces rain*)
- What happens when full clouds bump together and warm and cold droplets make an electric charge? (*lightning and thunder*)
- When the Sun shines his light through tiny water droplets, what do we see in the sky? (*rainbow*)
- At the end of the book, Cloud meets a new friend. What do you think will happen next? (*This process starts all over again. It's called the water cycle!*)

OAS ELA: Listening. Speaking. Reading. Phonics and Word Study (decoding).
OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Patterns. Cause and Effect.

SCIENCE: WATER PLAY **ACTIVITY**

Students will reproduce rainfall in simple terms.
Students will explain the relationship between rain and clouds.
Students will notice the properties of a liquid.

Submerge the raincloud bath toy in a container of water to fill it. Allow the student to hold it over the containter and the water wheel and watch it rain. What does the student notice? What phenomena does this represent in the real world? How would plants benefit from a rain shower?

OAS SCIENCE: Earth and Space Science. Asking Questions and Defining Problems. Constructing Explanations and Designing Solutions. Cause and Effect.

MATH: COUNTING RAINDROPS **ACTIVITY**

Students will **identify** the real shape of raindrops.
Students will **represent** written numbers with physical representations.
Students will **translate** equations into physical representations.

Ask students to place flat glass marbles on the rain-counting cards. The number of marbles should match the number on the cloud. Point out to students that the marbles are oblate spheroids, the shape of raindrops! Advanced students can use addition/subtraction rain-counting sheets.

OAS SCIENCE: Earth and Space Science. OAS MATH: Mathematical and Real-World Connections. Translate Ideas Mathmatically.