EXPLORADORES
OUTDOOR CLASSROOM

TEACHER'S GUIDE

CELEBRATE PLANET EARTH

CelebratePlanetEarth.org 1 800 698 4438 2025

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Acknowledgements

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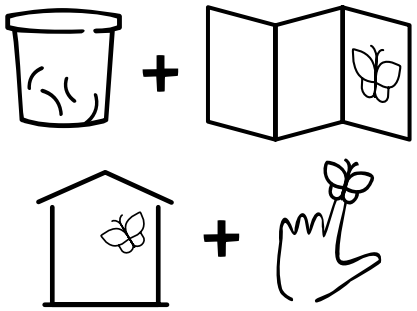

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What Is Outdoor Learning?

Definition and Purpose

Outdoor learning is an educational approach that takes place in natural or outdoor environments and uses nature as a tool for teaching. It encourages exploration, curiosity, and hands-on learning while connecting students to the world around them. This approach can happen right on school grounds and is not limited to science—it supports a wide range of subjects and skills.

Benefits for Student Development

Learning outdoors supports whole-child development. Students benefit cognitively, as outdoor experiences enhance focus, memory, and problem-solving. Physically, children are more active, developing motor skills and coordination. Emotionally, time spent outside reduces stress and builds confidence, while fostering a stronger connection to self and surroundings.

Core Principles of Outdoor Learning

The foundation of outdoor learning lies in experiential, inquiry-based education. It is student-centered, allowing children to follow their interests while engaging deeply with content. Outdoor learning supports place-based education, connecting lessons to the local environment and community, and emphasizes flexibility, creativity, and a deep respect for nature.

Outdoor Learning vs. Traditional Instruction

While traditional instruction often takes place indoors and focuses on structured content delivery, outdoor learning offers an open-ended, dynamic alternative. It doesn't replace classroom learning but enhances it—creating deeper connections, encouraging real-world applications, and making content more engaging and memorable for students.

Myths & Misconceptions

Outdoor learning is sometimes misunderstood. It's not just "free play" or recess—it's purposeful and intentional. It's not limited to science or physical education; all subjects can be enriched outdoors. While some may think it's hard to manage, with the right strategies and expectations, outdoor learning becomes a smooth, enriching extension of classroom life.

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Why Is Outdoor Learning Important?

Outdoor learning supports the holistic development of students by combining cognitive, physical, emotional, and social growth in a dynamic and enriching setting.

Academic Benefits

Research shows that outdoor learning can improve academic performance. It promotes active engagement, boosts attention span, and helps students retain knowledge through hands-on experiences. When students learn in meaningful, real-world contexts, their understanding and application of concepts deepen.

Social-Emotional Growth

Being outdoors nurtures students' social-emotional development. Collaborative activities and unstructured play encourage communication, empathy, and resilience. Outdoor environments offer opportunities for students to lead, make decisions, and build strong peer relationships, all while supporting mental wellness and confidence.

Physical and Mental Wellbeing

Outdoor learning contributes to healthier bodies and calmer minds. Exposure to green spaces has been linked to reduced anxiety and improved mood, helping students regulate emotions and return to the classroom more focused and ready to learn.

Environmental Awareness and Stewardship

Spending time outdoors fosters a deeper appreciation for the environment. Students begin to understand ecological systems, witness seasonal changes, and become more aware of their impact on the natural world. This awareness can inspire a sense of responsibility and promote lifelong environmental stewardship.

Equity and Access to Nature

Outdoor learning is a way to create more equitable access to nature for all students—especially those who may have limited opportunities outside of school. When thoughtfully planned, outdoor lessons can reflect diverse cultural perspectives and create inclusive experiences that value every student’s background and voice.

Relevance to 21st-Century Skills

In a changing world, students need to be adaptable, creative, and capable problem-solvers. Outdoor learning fosters collaboration, critical thinking, and communication—skills essential for the 21st century. It also builds resilience and curiosity, preparing students not just for school, but for life.

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Outdoor Safety Checklist

1. Check Weather Conditions
- Review Forecasts: Check the weather forecast for temperature, precipitation, and wind conditions. Look out for severe weather warnings.
- Prepare for Extremes: Plan for hot, cold, or rainy conditions. Adjust your plans or reschedule if necessary.

2. Do A Spot Check of the Outdoor Space
- Inspect the Area: Before starting activities, walk through the space to identify and remove harmful objects like broken glass, sharp rocks, or trash.
- Animal Scat: Look for and avoid areas with animal droppings, which could pose health risks or attract pests.
- Safety Hazards: Ensure there are no dangerous plants or unstable surfaces that could cause injury.

3. Wear Appropriate Clothing
For Spring/Summer:
- Hat: Wear a wide-brimmed hat for sun protection.
- Breathable Clothing: Opt for light, moisture-wicking fabrics to keep cool.
- Closed-Toe Shoes: Protect feet from cuts, stings, or other injuries.

For Fall/Winter:
- Layers: Wear multiple layers (long sleeves, sweaters) for changing temperatures.
- Outerwear: Use a waterproof and windproof jacket for protection against rain and wind.
- Accessories: Have a scarf, hat, and gloves to keep warm. Ensure shoes are insulated and waterproof if needed.

4. Visibility of Children
- Head Count: Regularly count children to ensure none are missing.
- Designated Areas: Establish clear boundaries for where children can and cannot go.
- Group Supervision: Keep children in small groups with assigned staff members to ensure constant supervision.

5. Keep Shoes On
- Footwear Safety: Reinforce the importance of keeping shoes on to prevent injuries from sharp objects or uneven ground.
- Comfort: Ensure shoes are well-fitted and comfortable for outdoor activities.

6. Sunscreen
- Application: Apply a broad-spectrum sunscreen with at least SPF 30 to all exposed skin. Do this 30 minutes before going outside.(Check for allergies/ sensitivities)

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Outdoor Safety Checklist

- Reapplication: Reapply every 2 hours, or more frequently if swimming or sweating.
- Sensitive Areas: Don't forget ears, neck, and backs of knees.

7. Water Bottle

- Hydration: Encourage frequent drinks of water to stay hydrated, especially on hot days.
- Refill Stations: Have access to water refill stations if available.
- Identification: Ensure each water bottle is labeled with their name to avoid mix-ups.

8. Bug Spray

- Application: Use insect repellent with DEET or natural alternatives as needed. Apply to exposed skin and clothing.
- Check Allergies: Be aware of any children with allergies or sensitivities to certain ingredients in bug sprays.

9. Regular Breaks

- Hydration Breaks: Schedule breaks every 30-60 minutes for water consumption.
- Shade: Provide time for children to rest in shaded areas to avoid overheating.
- Bathroom Breaks: Plan bathroom breaks at regular intervals, and make sure the facilities are easily accessible and clean.

10. Emergency Preparedness

- First Aid Kit: Carry a well-stocked first aid kit for treating minor injuries.
- Emergency Contacts: Have a list of emergency contacts and medical information for each child.
- Plan: Familiarize yourself with the nearest hospital or medical facility and have a communication plan in case of emergencies.

11. Activity-Specific Considerations

- Sport/Activity Gear: Ensure appropriate gear is worn for specific activities (e.g., helmets for biking).
- Skill Assessment: Assess the skill level of children for certain activities to prevent overexertion or unsafe practices.

12. Communication

- Instructions: Clearly communicate rules and expectations to children before starting outdoor activities.
- Signals: Establish signals for regrouping or calling attention during activities.

This SAFETY checklist covers aspects of outdoor safety and preparedness to ensure a safe and enjoyable experience for everyone involved.

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First Aid Kit Supply List

First Aid Kits

Store a few of each item in a ziploc bag and keep inside the fanny pack. Keep travel bottle of water separate.

- ☐ Band-aids (variety of sizes) (100 variety)
- ☐ Sanitary wipes (30)
- ☐ Cotton balls (200)
- ☐ Gauze pads (2x2) (25)
- ☐ Medical gloves one size fits all (100 count)
- ☐ Travel size bottle for water (irrigate minor scrapes and or wounds)
- ☐ 2 Fanny Packs
- ☐ Ziploc bags (100 sandwich)

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Curriculum Integration

A Natural Fit Across Subjects

Outdoor learning lends itself seamlessly to cross-curricular connections. From math and science to reading, writing, and art, the natural world offers endless opportunities to anchor lessons in real-life context. This section explores how outdoor settings can serve as a living classroom that reinforces core academic content in creative and engaging ways.

Language Arts in the Outdoors

Nature can be a powerful prompt for storytelling, descriptive writing, and poetry. Students can observe and journal about their surroundings, conduct interviews about the environment, or write persuasive texts advocating for local green spaces. Reading outside—whether it's fiction, nonfiction, or bilingual texts—can help students connect literature to the world around them.

Examples and Sample Lessons

1. Outdoor Storytelling & Creative Writing

Nature-Inspired Stories: Have students find an object in nature and write a short story about it.

Story Stones: Collect and paint small stones with images (trees, animals, weather, etc.), then use them as story prompts.

Sensory Poetry: Sit outside, observe the surroundings, and write poems using the five senses.

Writing Walks: Pause at different locations and write descriptive paragraphs based on what they see, hear, and feel.

2. Reading in Nature

Outdoor Reading Nooks: Set up cozy reading areas under trees or in a garden space.

Read & Roam: Assign different outdoor spots for reading specific chapters or sections.

Listening to Nature Stories: Read aloud books about nature, animals, or the environment.

Echo Reading: Read a passage out loud and have students repeat it, using nature sounds as background inspiration.

3. Vocabulary & Word Games

Nature Alphabet Hunt: Find objects in nature that start with each letter of the alphabet.

Adjective Adventure: Describe an outdoor scene using as many adjectives as possible.

Curriculum Integration

Outdoor Word Walls: Use chalk or cards to display new words and find examples of them in nature.

Poetry Walk: Write a word or phrase on each step of a trail and use them to create a poem.

4. Drama & Performance in Nature

Act Out a Story: Have students perform a scene from a book using natural props.

Shadow Puppet Theater: Use the sun and handmade puppets to tell a story.

Improvised Storytelling: One student starts a story, and others add to it as they explore.

5. Journaling & Reflection

Nature Journals: Write observations, reflections, or sketches about outdoor experiences.

Letter to Nature: Write a letter to a tree, river, or animal expressing gratitude or curiosity.

Outdoor Book Reviews: After reading, students write a review and present it in a natural setting.

Social Studies and Place-Based Learning

The outdoors can connect students to the history, geography, and cultural richness of their local area. Lessons can incorporate maps, indigenous knowledge, local food systems, and environmental justice. When students learn about the people and stories of their place, they develop stronger community ties and a greater sense of identity.

Math in Nature

Outdoor spaces are full of math problems waiting to be solved. Students can measure plant growth, graph temperatures, calculate distances, count wildlife, or explore geometry through natural shapes and patterns. These real-world applications deepen conceptual understanding and make math feel meaningful and accessible.

Examples and Sample Lessons

1. Measurement & Data Collection

Nature Measuring: Have students measure tree trunks, leaves, or shadows and compare sizes.

Temperature Tracking: Record daily temperatures and graph the changes over time.

Curriculum Integration

Rainfall & Weather Data: Collect and analyze precipitation levels over a week or month.

Pacing & Estimation: Have students estimate and measure distances by counting steps.

2. Geometry in Nature

Shape Hunt: Identify geometric shapes in nature (e.g., hexagons in honeycombs, spirals in flowers).

Symmetry Search: Find examples of symmetry in leaves, butterflies, or spiderwebs.

Angles & Lines: Use sticks or branches to create and classify different types of angles and lines.

3. Counting & Number Sense

Leaf or Rock Sorting: Gather and count leaves, rocks, or flowers, then sort by size, color, or type.

Skip Counting with Nature: Use pinecones, acorns, or sticks to practice multiplication and division.

Estimations & Comparisons: Guess the number of seeds inside a fruit, then count and compare.

4. Fractions & Ratios

Fraction Walk: Find and compare fractions in nature (e.g., half of a leaf eaten by insects).

Proportions in Plants: Compare the height of plants to their leaf width using ratios.

Symmetry & Division: Divide natural objects (e.g., an apple or flower petals) into equal parts.

5. Math in Outdoor Games & Activities

Scavenger Hunt: Assign point values to different found objects and have students total their scores.

Timed Races & Averages: Time students running a set distance, then calculate averages and speed.

Building Structures: Use natural materials to create 3D shapes, exploring volume and surface area.

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Curriculum Integration

Science Comes Alive Outdoors

Outdoor learning naturally supports life science, earth science, and environmental studies. Whether it's observing insect life cycles, testing soil, tracking weather patterns, or learning about local ecosystems, students develop scientific thinking skills while engaging in hands-on inquiry. It's also an ideal setting for STEM and citizen science projects.

Examples and Sample Lessons

1. Observation & Classification – Nature Scavenger Hunt

- Give students a checklist with items like a smooth rock, a rough leaf, an insect, something round, something tiny, etc.
- Encourage them to describe textures, colors, and patterns to develop observation skills.

2. Physical Science – Sink or Float Experiment

- Collect natural objects like leaves, sticks, rocks, and pinecones.
- Predict which will sink or float in a bucket of water, then test and record results.
- Discuss why objects float or sink using simple concepts like weight and density.

3. Earth & Space Science – Shadow Tracing

- Have students trace their shadows with chalk in the morning, then again in the afternoon.
- Observe how their shadows change throughout the day and discuss how the sun moves in the sky.

4. Life Science – Worm Exploration

- Dig in the dirt and observe worms up close!
- Discuss how worms help the soil and what they need to survive.
- Let students gently return them to the soil and talk about caring for living things.

5. Plant Science – Color Changing Flowers

- Place white flowers (or celery) in cups of colored water.
- Observe how the petals or leaves change color over time.
- Discuss how plants drink water through their stems.

6. Engineering & Animal Adaptations – Building a Bird Nest

- Give students natural materials like twigs, grass, and leaves.
- Challenge them to build a bird nest and test if it can hold an egg (plastic or real).
- Discuss how birds engineer nests to protect their babies.

Curriculum Integration

7. Weather & Measurement – Rain Gauge

- Help students make a simple rain gauge using a plastic bottle.
- Place it outside to collect rainwater and measure the amount each day.
- Discuss weather patterns and the water cycle.

8. Biodiversity & Ecosystems – Bug Hotel

- Collect natural materials like sticks, leaves, and bark to build a small "bug hotel."
- Observe which insects visit and talk about their roles in the ecosystem.

9. Science & Art Connection – Leaf Rubbings

- Gather different leaves and place them under paper.
- Use crayons to create rubbings and compare shapes, vein patterns, and textures.
- Discuss how different leaves help trees survive.

10. Meteorology – Cloud Watching & Weather Journals

- Lay on the grass and observe different types of clouds.
- Draw or describe their shapes and predict the weather.
- Track daily weather changes in a nature journal.

Arts Integration

Creative expression thrives outdoors. Students can sketch natural objects, create leaf rubbings, build sculptures from found materials, or compose music inspired by the environment. Integrating visual and performing arts in outdoor lessons nurtures imagination and allows multiple ways for students to demonstrate understanding.

Planning for Standards Alignment

Outdoor learning doesn't mean stepping away from standards. With thoughtful planning, lessons can meet academic benchmarks while providing meaningful, student-centered experiences. This section includes tips on mapping outdoor activities to your grade-level standards and documentation requirements.

Examples and Sample Lessons

Explore sample lesson ideas and real-life examples of curriculum integration across grade levels. See how teachers have successfully implemented outdoor learning to enhance academic outcomes and student engagement, and get inspired to adapt these approaches to your own classroom.

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Justifying Outdoor Learning

Aligning with Educational Standards

Outdoor learning is not an add-on—it directly supports required learning outcomes. This section demonstrates how outdoor activities align with Common Core, NGSS (Next Generation Science Standards), and state-level academic standards. It provides evidence that nature-based education meets—and often exceeds—curricular expectations across subjects.

Supporting Whole-Child Development

Research shows that outdoor learning enhances cognitive, physical, social, and emotional development. It supports differentiated instruction and nurtures multiple intelligences by engaging students through movement, hands-on activities, and sensory-rich environments. Here, we explore how outdoor learning contributes to the goals of holistic education.

Culturally Responsive and Inclusive Learning

Outdoor learning can reflect and honor the cultural backgrounds of all students. It encourages storytelling, community knowledge, and environmental traditions that foster equity and inclusion. This section includes ways outdoor learning helps bridge achievement gaps and create more accessible, engaging experiences for diverse learners.

Evidence from Research and Best Practices

This part offers an overview of current research supporting outdoor learning, including studies that show increased academic achievement, better behavior, stronger attendance, and greater engagement. It also shares best practices from schools and educators who've successfully embedded outdoor education into their curricula.

Administrative and Family Support

Successfully implementing outdoor learning often requires buy-in from leadership and families. This section includes sample language to help justify outdoor programs to principals, superintendents, and caregivers. You'll find strategies for communicating the educational value of outdoor time, addressing concerns, and highlighting student benefits.

Long-Term Impact and Lifelong Learning

Beyond short-term academic gains, outdoor learning fosters life skills such as resilience, curiosity, environmental awareness, and collaboration. Students who learn outside often become lifelong learners and environmental stewards. This final part ties together how outdoor education equips students for future success inside and outside the classroom.

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Exploring our Five Senses in Nature

INTRODUCE THE ACTIVITY:

Say to students – *"Now we are going to think about the different ways we experience the outdoors using our five senses. Whether we're in a garden, a forest, a park, or even just outside our school, we can learn a lot by slowing down and paying attention to what we can see, hear, feel, smell, and imagine tasting."*

BEGIN WITH A QUESTION:

Ask students – *"What are our five senses? Can you name one or more?"*
Students may respond with: ***Touch, Taste, Smell, See, Hear***

GUIDE THROUGH SENSORY-BASED QUESTIONS:

Ask – *"What do you notice when you're outside in nature?"*
Prompt students to think about plants, animals, weather, or changes in the seasons.

Ask – *"How is being outdoors different from being inside the classroom?"*
Encourage responses about fresh air, space to move, sounds, textures, and natural light.

Ask – *"What sounds do you hear right now?"*
Birds, wind, rustling leaves, insects, people, footsteps, distant cars, etc.

Ask – *"What can you touch around you?"*
Tree bark, grass, leaves, soil, rocks, sticks, petals, or warm sun on your skin.

Ask – *"What do you smell in the air?"*
Fresh-cut grass, damp earth, flowers, pine needles, compost, or the smell of rain.

Ask – *"What tastes might come to mind when you're outside?"*
This is a good moment to talk about imagination and safety—students shouldn't taste things unless it's part of a supervised activity like a garden harvest. They can still imagine flavors: sweet flowers, fresh herbs, or cool mint.

Ask – *"What do you see when you look around?"*
Colors, textures, light and shadow, insects, movement, clouds, and patterns in nature.

WRAP UP:

Encourage students to share their thoughts and notice how each person experienced the same place a little differently. You can say: *"There are so many details to discover when we slow down and use all five of our senses. Every day outside is a new adventure when we really pay attention."*

Observation & Inquiry in Outdoor Learning

Purpose: Observation and inquiry are critical components of outdoor learning as they foster curiosity, critical thinking, and a deeper understanding of the natural world. When children observe and ask questions about their surroundings, they begin to form connections to the environment and engage in active problem-solving. This process enhances their scientific thinking, encourages independent exploration, and builds their ability to make sense of the world around them.

Key Benefits:

- **Develops Critical Thinking:** When children observe natural phenomena and ask questions, they practice reasoning and analyzing the world around them. They begin to think about "why" and "how" things happen, which promotes a deeper understanding of scientific concepts.
- **Fosters Curiosity:** Outdoor settings naturally spark curiosity. Observation allows children to notice patterns, behaviors, and interactions in nature, which encourages them to ask questions and seek answers.
- **Promotes Active Engagement:** Inquiry-based learning in the outdoors makes children active participants in their learning. By observing and investigating their environment, children take ownership of their learning and develop a hands-on approach to problem-solving.
- **Enhances Language Development:** Through observation and inquiry, children learn new vocabulary related to the natural world. Discussing their observations helps children practice communication, improve descriptive language, and engage in thoughtful conversations.
- **Encourages Scientific Exploration:** Outdoor observation serves as the foundation for scientific inquiry. It allows children to experiment, make predictions, test ideas, and reflect on their findings. This is the beginning of developing scientific literacy that will support more complex learning in later years.

Activity Example: When observing a simple natural element—such as a tree, plant, or rock formation—encourage children to ask questions like, *"What do you notice about this tree? How does it change in different weather?"* or *"Why do certain plants grow here and not others?"* These questions prompt inquiry and open the door for further exploration of concepts like growth, ecosystems, and environmental factors.

Why It Matters: Observation and inquiry activities not only deepen students' understanding of nature but also build essential skills for lifelong learning. As students interact with their environment and ask questions, they develop a sense of wonder and excitement about the world around them. This type of experiential learning strengthens cognitive development, enhances emotional resilience, and fosters a sense of connection to nature, all of which are vital for holistic development.

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Exploring River Corridors

Objectives: What Students Will Figure Out

- Students will identify and familiarize themselves with the five rivers of New Mexico.
- Students will identify qualities of healthy river habitats, including plant and wildlife identification.
- Students will learn about droughts and consider ways a drought may impact river habitats.
- Students will engage in counting, subtraction and addition while thinking about the number of rivers the state of New Mexico has.
- Students will explore how they experience a river and its environment using their five senses.
- Students will listen to and discuss *I Asked the River* by Valerie Bloom.

Optional Objectives if Completing Field Notes Activities

- Students will use their Field Notes booklet or worksheet to identify the number of rivers in New Mexico and work through math problems.

Addressed Standards: What Students Will Do

Standards from New Mexico Public Education Department

NM Health & Safety K Benchmark 5

Practice safety rules at home, in school and in the community.

NM Common Core Math K.CC

Count to tell the number of objects.

NM Common Core Math K.OA

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

NM Common Core ELA, K Language Standards, Vocabulary Acquisition and Use

Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.

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Exploring River Corridors

Key Vocabulary

river (noun) a large natural stream of water flowing in a channel to the sea, a lake, or another such stream

habitat (noun) the natural home or environment of an animal, plant, or other organism

environment (noun) the surroundings or conditions in which a person, animal, or plant lives or operates

drought (noun) a prolonged period of abnormally low rainfall, leading to a shortage of water

Assessments

There are **informal assessment** opportunities throughout the lesson.

They include but are not limited to:

- *Did students identify the correct number of rivers in New Mexico?*
- *Did students accurately perform addition and subtraction problems up to the number five?*
- *Did students recognize or retain the meaning of key vocabulary?*

Identify additional assessment tools from curriculums and materials at your school site that you plan to use as part of this lesson.

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Exploring River Corridors

Lesson Preparation

1. Review Materials Checklist
2. Decide which materials you will include in lesson
3. Create space in your learning area to display lesson materials
4. Remember to separate out any materials that students can keep or take home.
5. Review lesson activities and script. Modify for your class as needed, deleting or expanding on certain activities to meet the needs of your students.

Materials Checklist

- ☐ Presentation Pages
- ☐ Easel/Wall/Other Method for holding and displaying presentation pages.
- ☐ Seeds
- ☐ Leaves
- ☐ Cotton from cottonwoods
- ☐ Laminated photos of trees and animals
- ☐ Laminated Map of New Mexico
- ☐ Dry Erase Markers
- ☐ Water
- ☐ Clear bin
- ☐ Sand and Debris (non-toxic, safe for touching)
- ☐ Handouts and printed materials for student home connection

Optional Materials

- ☐ Post it notes or stickers
- ☐ Field Notes Activity Booklet
- ☐ Field Notes Activity Page

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Exploring River Corridors

Detailed Lesson Steps

Total Lesson Time: Approximately 30 Minutes

Step 1 *1-2 mins*
Introduction

Explain to students...

- Today we are going to think, talk and learn about parts of our environment!
- I have some materials over here for today's lesson.
- We will all get a chance to look at and interact with these materials during the lesson. Please do not touch any materials until I let you know it is time to use them!
- You will get to take home something from these materials home with you today! Make sure you are listening and participating during the entire lesson, so you know what to do with these materials at home.

Materials

- Designated materials display area
- All materials from checklist are visible to students from display area

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Exploring River Corridors

Step 2 *5 mins*
Open Ended Questions

Explain to students...
I am going to ask you all some questions about rivers in New Mexico.
When you are ready to answer a question, I want you to show me by...
Raising your hand, shouting out the answer, putting your finger on your nose, etc (use your preferred method with this group)

Show students...
This is a map of New Mexico. We will use this map to help us think about where the rivers in New Mexico are.

Ask students... *answers are italicized*
What is the river that runs through all of New Mexico?
Rio Grande
How many rivers does New Mexico have?
Six rivers, as well as many creeks and streams.
What are the names of all six rivers in New Mexico?
Rio Grande
Pecos
Chama
San Juan
Gila
Canadian
Who can show us on the map where these rivers are?

- *Students point to rivers on map*
- *Students identify river location on map with dry erase marker*
- *Students and teacher work together to name the rivers*
- *Teacher marks each river with a sticker or post it note*

Show students...
These are photos of plants and animals that can be found along the rivers of New Mexico. Rivers are amazing and diverse habitats!

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Exploring River Corridors

Ask students...
What types of life do you see at the river?
- *Many birds*
- *Otters*
- *Beavers*
- *Porcupines*
- *Trees*
  - *Cottonwood, Mesquite, New Mexico Olive, Coyote Willow, Catalpa, Siberian Elm, Russian Olive, Salt Cedar*

Encourage students to share additional ideas, even if they are not pictured.

Explain to students...
All of your examples show us what a healthy river might be like! Yet sometimes rivers go through changes, just like people!

Ask students...
What might happen if a river doesn't have enough water?
- *It can dry up*
- *It can stop flowing*
- *Plants stop growing*
- *Fewer animals visit or live at the river*

What is it called when a river or an area doesn't have enough water?
- ***drought***

Explain to students...
Let's remember our new vocabulary word, drought, as we start our math connection!

Materials
- Laminated Map of New Mexico
- Laminated photos of plants and animals from river habitat
- Optional: Field Notes Activity Booklet

Exploring River Corridors

Step 3 *5 mins*
Math Connection

Ask students...

Who remembers how many rivers we have in New Mexico?

Six!

That's right! How do you know there are six rivers in New Mexico?

Students can show their learning in the following ways...

- *Student approaches map, pointing to and counting the rivers that were identified in the previous activity.*
- *Student explains that there are six because we discussed it and they can see six rivers.*
- *Students have hard copies of the map in their printed field notes activity book, marking and counting independently.*

Ok, we know there are five rivers in New Mexico. What would happen if there was a drought at the Pecos River?

The Pecos River might dry up if there is a drought.

If the Pecos River dries up, how many rivers would we have left in New Mexico?

Five rivers
Model on a whiteboard or projector with the equation 5-1=4
Option for students to work on this equation on a whiteboard or in Field Notes Activity Booklet.

What if the water returned to Pecos River, and it started flowing again? How many rivers would New Mexico have then?

Six rivers
Model equation 4+1=5
Option for students to complete equations in their booklet or whiteboard.

Instructors may generate additional equations using different rivers and scenarios for students to work with addition and subtraction up to the number five.

Materials

- Laminated Map of New Mexico
- Optional: Field Notes Activity Booklet
- Optional: Whiteboards

Exploring River Corridors

Step 4A *5 Mins*
Exploring our Five Senses

Explain to students...
Now we are going to think about the ways we experience river environments using our five senses.

Ask students... *answers are italicized*
What are our five senses? If you can't remember all of them, can you name one of them?

- *Touch*
- *Taste*
- *Feel*
- *See*
- *Hear*

What do you notice when you are around a river?
How is a river environment different from being away from the water?

- *There are many green plants and trees near rivers and bodies of water.*
- *The temperature might be cooler near the water.*
- *There is more wildlife near the river.*

What sounds come to mind when you think of the river?
What can you touch with your hands in the river?
What can you smell when you are close to the river?
What can you taste from the river?
What do you see when you look at a river?

In addition to the responses offered above, students should generate their own responses.

Materials

- Laminated Map of New Mexico
- Laminated photos of plants and animals from river habitat

EXPLORADORES

Exploring River Corridors

Step 4B *3 mins*
Move our Bodies

Explain to students...
Now we are going to move our bodies! Let's move while we think about the river and our five senses!
Now, I want you to repeat after me. Make sure you use your voice and your body!

Students repeat and move after you...
Everyone stand up and move like me...
Students repeat and wiggle their bodies like the water.
I am the river and I am flowing!
Students repeat and continue to wiggle their bodies.
When I am at the river I can see...
Students repeat and hold hand up to forehead, looking from side to side.
Animals, plants and really big trees!
Students repeat and follow your movements.
The rivers flow and give us life!
Students repeat and follow your movements.
I see an otter and it takes a dive!
Students repeat and make a diving motion.
Now let's shake off the water and make ourselves dry!
Students repeat-shaking their bodies like they are drying off.

As desired, use an alternate dance, song or body exercises with your students to replace the rhyme above. If replacing the movement activity, make sure it connects to the concepts of rivers, wildlife or the environment.

Exploring River Corridors

Step 5 *8 mins*
Observation and Inquiry: Build a Mini River

Materials
- Aluminum foil or blue paper
- Rocks, pebbles, sticks
- Toy animals (fish, ducks, frogs, etc.)
- Watering can or spray bottle with water
- Optional: Blue glitter or food coloring

Instructions
1. **Create the riverbed:** Lay out the aluminum foil or blue paper in a winding shape to represent the river.
2. **Add natural elements:** Let the children place rocks, pebbles, and sticks along the riverbed to create a natural environment.
3. **Introduce the animals:** Have the children choose their favorite toy animals and place them in and around the river.
4. **Make it flow:** Use the watering can or spray bottle to gently pour or spray water onto the river, simulating the flow of the river.
5. **Observe and explore:** Encourage the children to observe how the water flows, interacts with the rocks and sticks, and affects the animals.

Learning Connections
Sensory Exploration: Children will engage their senses of touch, sight, and sound as they interact with the water, natural materials, and toy animals.
Vocabulary Development: Introduce and reinforce key vocabulary words such as river, flow, water, rocks, animals, and habitat.
Science Concepts: Children will observe the movement of water, the effects of water on the environment, and the different types of animals that live in and around rivers.
Creativity and Imagination: Children will use their creativity and imagination as they build and play with their mini river.

Differentiation
- For younger children, simplify the activity by focusing on sensory exploration and vocabulary development.
- For older children, introduce more complex concepts such as the water cycle, pollution, and conservation.

- Encourage children to create stories or narratives about their mini river and the animals that live there.

Extension Activities

- Read books or watch videos about rivers and river animals.
- Draw pictures or create collages of river scenes.
- Sing songs or recite poems about rivers.
- Discuss the importance of keeping rivers clean and healthy.

Remember to adapt the activity to the specific needs and interests of your pre-K students. Have fun exploring the wonderful world of rivers!

Step 6 *5 mins*
I Asked the River https://clpe.org.uk/poetry/poems/i-asked-river

Explain to Students...
We are now going to listen to a poem called 'I Asked the River' by Valerie Bloom. As you listen, try to recognize any words you might now know the meaning of.

Play the video linked above or read the poem aloud to your students:

'Why do you run?' I asked the river,
'So fast I can't compete.'
'I run,' the river said, 'because
I have some streams to meet.'

'Where do you go?' I asked the river,
'And what do you do there?'
'I go to the valley,' the river said,
'Where I wash the rushes' hair.'

'Why do you sing?' I asked the river,
'Such a sweet and happy tune?'
'Because,' the river smiled,
'I'm having lunch with the sea at noon.'

Exploring River Corridors

'Why do you laugh?' I asked the river,
'You'll share the joke I suppose?'
'I woke the mountain,' the river grinned,
'By tickling his toes.'

Then the river shuddered, groaned and sighed,
The song of the streams and the laughter died,
And it whispered sadly, 'I can't, I can't,'
As it limped along like an ancient aunt.

'Now why do you wait?' I asked the river,
'And why is your current so slow?'
'Something holds me back, ' it said.
Its voice was faint and low.

'And is that why you're getting small?
Is that why you sigh?'
'I sigh,' the river said, 'because
I know that soon I'll die.'

'Why don't you fight for your life?' I asked,
'You only foam and seethe.'
'My lungs are clogged,' the river moaned,
'And I can hardly breathe.'

'Perhaps a rest,' I told the river,
'Would help to clear your head.'
'I cannot rest,' the river said,
'There's garbage in my bed.'

'What's this garbage,' I asked, disturbed,
'Which is clogging up your sand?'
'Poisonous waste and wrappers like this,
Which just fell from your hand.'

Exploring River Corridors

Discuss with Students...

Were there any words in the poem that you don't know the meaning of?

Students identify unknown words and discuss possible meanings.

What is this poem about?

The river, trash, how the river feels, who the river visits.

Why can't the river rest?

There is garbage in its bed.

Why is it important to pick up our trash?

To protect the environment, keep our rivers healthy, make sure animals don't get sick.

Step 7 *5 mins*

Clarify & Close Out

Explain to students...

A pledge is when we make a promise. I am going to share with you a pledge from Celebrate Planet Earth. When you take this pledge, you are making a promise to help take care of our planet!

Recite the Planet Earth Pledge with Students...

No job is too big
No action too Small
For the care of the Earth
Is the Task of us all!

Closing Questions...

- What did you learn today?
- What are you excited to learn more about in the future?
- What kinds of observations did we make today?
- How can you continue observing the world around you?

EXPLORADORES

EXPLORADORES

Exploring Terrific Trees

Objectives: What Students Will Figure Out

- Students will learn about the Cottonwood and other trees in New Mexico.
- Students will learn about the parts of a tree.
- Students will identify and discuss the habitats that surround trees, including wildlife and other plants.
- Students will identify and discuss the relationship between bodies of water and trees.
- Students will use scenarios with trees to compute addition equations up to the number ten.
- Students will review their five senses and relate them to trees.
- Students will be introduced to the carbon cycle and atoms.
- Students will move and relate their breathing to the carbon cycle.
- Students will determine the meaning of unknown words and phrases in *'The Quiet of the Trees'* by Kate Wakeling.

Optional Objectives if Completing Field Notes Activities

- Students will use their Field Notes booklet or worksheet to record their observations throughout various parts of the lesson.

Addressed Standards: What Students Will Do

Standards from New Mexico Public Education Department

NM Health & Safety K Benchmark 5

Practice safety rules at home, in school and in the community.

NM Common Core Math K.CC

Count to tell the number of objects.

NM Common Core Math K.OA

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

NM Common Core ELA, K Language Standards, Vocabulary Acquisition and Use

Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.

EXPLORADORES

Exploring Terrific Trees

Key Vocabulary

catkins (noun) a flowering spike of trees such as willow and hazel. Catkins are typically downy, pendulous, composed of flowers of a single sex, and wind-pollinated.

cotton (noun) a soft white fibrous substance that surrounds the seeds of a tropical and subtropical plant and is used as textile fiber and thread for sewing.

trunk (noun) the main woody stem of a tree as distinct from its branches and roots.

bark (noun) the tough protective outer sheath of the trunk, branches, and twigs of a tree or woody shrub.

canopy (noun) an ornamental cloth covering hung or held up over something, especially a throne or bed.

carbon cycle (noun) the series of processes by which carbon compounds are interconverted in the environment, involving the incorporation of carbon dioxide into living tissue by photosynthesis and its return to the atmosphere through respiration, the decay of dead organisms, and the burning of fossil fuels.

atom (noun) the basic unit of a chemical element.

Assessments

There are **informal assessment** opportunities throughout the lesson.

Identify additional assessment tools from curriculums and materials at your school site that you plan to use as part of this lesson.

EXPLORADORES

Exploring Terrific Trees

Lesson Preparation

1. Review Materials Checklist
2. Decide which materials you will include in lesson
3. Create space in your learning area to display lesson materials
4. Remember to separate out any materials that students can keep or take home.
5. Review lesson activities and script. Modify for your class as needed, deleting or expanding on certain activities to meet the needs of your students.

Materials Checklist

- ☐ Tree bark
- ☐ Leaves
- ☐ Seeds
- ☐ Catkins
- ☐ Cottonwood fluff
- ☐ Laminated photos
- ☐ The Carbon Cycle illustration

Optional Materials

- ☐ Cottonwoods Multimedia Presentation - CelebratePlanetEarth.org/wild-world
- ☐ Field Notes Activity Booklet
- ☐ Field Notes Activity Page

EXPLORADORES

Exploring Terrific Trees

Detailed Lesson Steps

Total Lesson Time: Approximately 30 Minutes

Step 1 *1-2 mins*
Introduction

Explain to students...

- Today we are going to think, talk and learn about parts of our environment!
- I have some materials over here for today's lesson.
- We will all get a chance to look at and interact with these materials during the lesson. Please do not touch any materials until I let you know it is time to use them!
- You will get to take home something from these materials home with you today! Make sure you are listening and participating during the entire lesson, so you know what to do with these materials at home.
-

Materials

- Designated materials display area
- All materials from checklist are visible to students from display area

Exploring Terrific Trees

Step 2 *5 mins*

Open Ended Questions

Explain to students...
I am going to ask you all some questions about trees in New Mexico.
When you are ready to answer a question, I want you to show me by...
Raising your hand, shouting out the answer, putting your finger on your nose, etc (use your preferred method with this group)

Show students...
This is a photo of a Cottonwood Tree. Look closely at the photo, and look at these parts of the tree I have in our materials area.
Use either a laminated photo or project thePrezi Presentation.

Ask students... *answers are italicized*
What do cottonwood trees look like?
- *It is big and tall*
- *It has big, green leaves*
- *The trunk is skinny*
- *The bark is gray colored*
- *They have white cotton*

How can you identify a cotton tree?
- *The shape of the leaves*
- *Triangular with serrated edges*
- *The color of the leaves*
- *Usually green but can turn yellow during the fall season*
- *The color and texture of the bark*
- *Gray color with grooves or lines that make an uneven texture*
- *Its location*
- *Cottonwoods are usually close to bodies of water*
- *It has cotton that comes off of it*

Where can you find Cottonwood trees?
- *Close to water sources like rivers, streams and lakes*

EXPLORADORES

Exploring Terrific Trees

What animals can be found around cottonwood trees?

Birds

Woodpeckers, owls, various songbirds

Mammals

Squirrels, raccoons, deer

Insects

Butterflies, beetles, caterpillars

Reptiles

Lizards and snakes

What do trees need to survive?

Sunlight

Water

Nutrients

Air

Space

Materials

- Laminated tree photos
- Cottonwoods Multimedia Presentation - CelebratePlanetEarth.org/wild-world
- Optional: Field Notes Activity Booklet

Exploring Terrific Trees

Step 3 *5 mins*

Math Connection

Ask students...

Look at this photo of trees by the Rio Grande. How many trees do you see?

Four!

That's right! How do you know there are four trees?

I counted one, two, three, four

Ok, now look at this picture, how many trees do you see here by the Pecos river?

Three!

Correct! There are three trees here in this photo by the Pecos river. Now, if we add together the trees from the Rio Grande and the Pecos river, how many trees will we have?

Seven trees

Model on a whiteboard or projector with the equation 3+4=7

Option for students to work on this equation on a whiteboard or in Field Notes Activity Booklet.

What if two more rivers grew by the Pecos River? How many more trees would we have all together?

Nine rivers

Model equation 7+2=9

Option for students to complete equations in their booklet or whiteboard.

Instructors may generate additional equations using different rivers and scenarios for students to work with addition and subtraction up to the number ten.

Materials

- Laminated Photos of Cottonwoods or other New Mexico Trees
- Option: Sketch trees and wildlife on paper or whiteboard to correspond with Match Connection Problems
- Optional: Field Notes Activity Booklet
- Optional: Whiteboards

EXPLORADORES

Exploring Terrific Trees

Step 4A *5 Min*

Exploring our Five Senses

Explain to students...
Now we are going to think about the ways we experience river environments using our five senses.

Ask students...
What are our five senses? If you can't remember all of them, can you name one of them?

Touch
Taste
Feel
See
Hear

What Does a Cottonwood Tree look like, feel like, smell like, sound like?

It looks...
Tall, gray and brown and green, sometimes yellow, and its branches spread out far
It feels...
Rough and textured on the bark, smooth and leathery on the leaves
It smells...
Fresh and earthy
Its flowers are subtle and sweet
It sounds like...
Rustling in the wind
Noises from wildlife that live in the tree

What can you touch with your hands on the tree?

Its bark, its leaves, its trunk

Does the cotton from the cottonwood have a smell?

It does not have a scent.

Can we taste the tree?

The cottonwood cotton and leaves are not edible,
but you can use its cotton to make a tea.

The cottonwood doesn't have fruit we can taste, but other trees do. Can you think of a fruit from a tree? What does it taste like?

Apples, oranges, plums, apricots, tangerines, etc

In addition to the responses offered above, students should generate their own responses.

From Materials Display Area:
- tree bark
- leaves
- seeds
- catkins
- cotton fluff

Step 4B *3 mins*

Leaves, Branches, Trunk and Roots

To the tune of "Head, Shoulders, Knees and Toes"

Explain to students...
Now we are going to move our bodies! Let's move while we think about the river and our five senses!
Now, I want you to repeat after me. Make sure you use your voice and your body!

Movement Guide

Leaves – touch your head
Branches – touch your shoulders
Trunk – touch your waist
Roots – touch your feet or legs

Flowers – touch your head
Cotton – touch your shoulders
Bark – touch your waist
Seeds – touch your feet or legs

Students repeat and move with you... *start slowly and gradually speed up*
Leaves, branches, trunk and roots (trunk and roots)
Leaves, branches, trunk and roots (trunk and roots)
Flowers and cotton and bark and seeds
Leaves, branches, trunk and roots (trunk and roots)

As desired, use an alternate dance, song or body exercises with your students to replace the rhyme above. If replacing the movement activity, make sure it connects to the concepts of trees, wildlife or the environment.

Exploring Terrific Trees

Step 5 *5 mins*

Observation and Inquiry

Ask Students...
Remember when we talked about the wildlife that you can find near a tree? What animals have you observed using trees as their home?

Many birds have nests in trees
Owls, woodpeckers
Rodents like squirrels use the trunk of a tree as a shelter or home
Large cats climb trees and use them to hunt
Porcupines and snakes

Explain to Students...
Now that we are thinking about the animals who live around trees, I want to talk to you all about a new idea. We are going to talk about the carbon cycle.
The carbon cycle is like a big game of tag for carbon atoms.

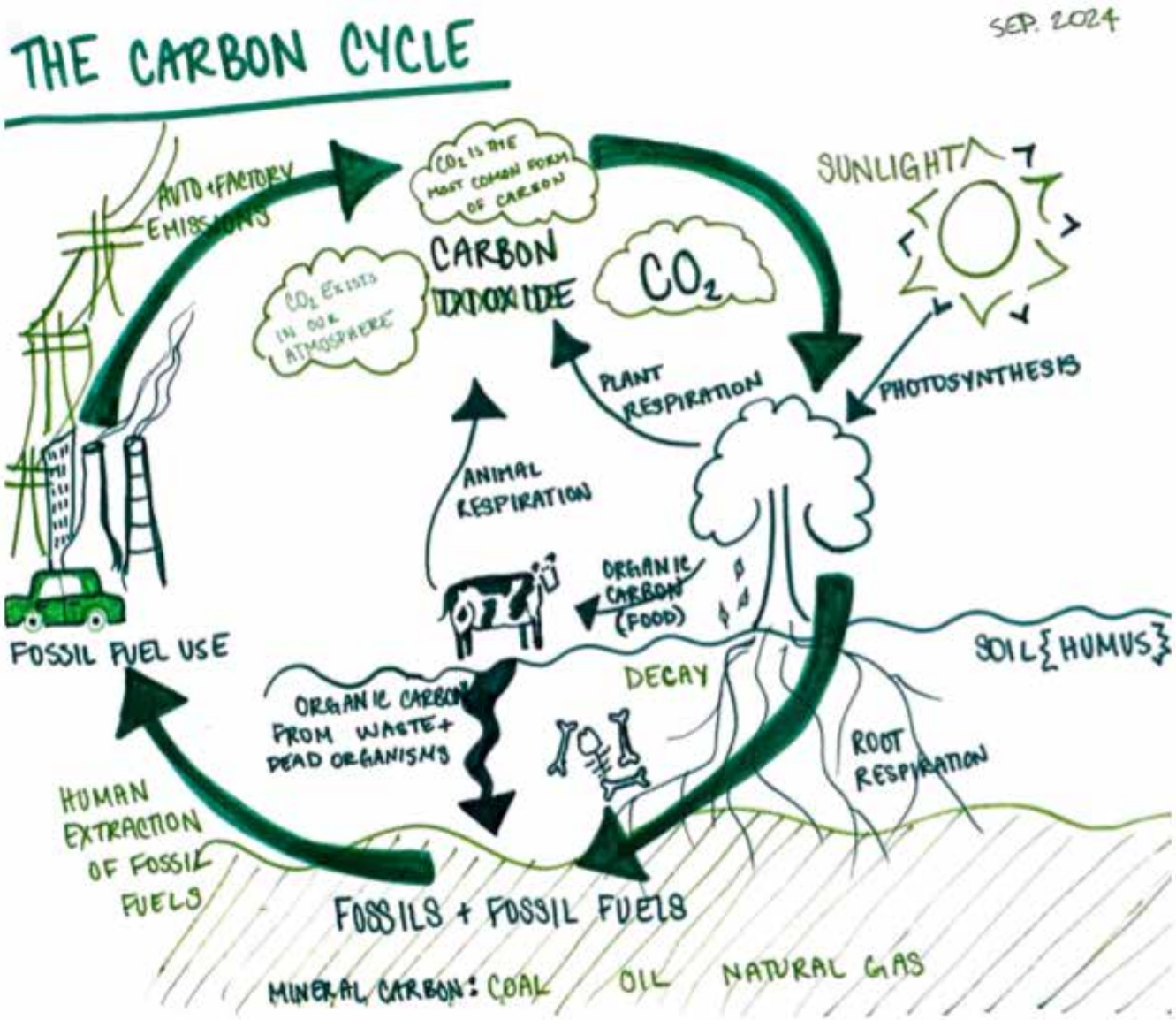
Show Students... *illustration is on the next page*
This is an illustration that will help us think about the carbon cycle.
Look closely at the illustration.

Explain to Students...
Imagine carbon atoms are playing tag around the Earth. They start in the air as carbon dioxide. Plants catch them and turn them into food. Animals eat the plants and get the carbon. When animals breathe out, the carbon goes back into the air. When plants and animals die, they decay and release carbon into the air. Burning things also releases carbon. So, carbon is always moving around, from air to plants, animals, and back to air again.

Breathe with Students...
When we breathe in, we take in carbon and oxygen.
When we breathe out, we release carbon dioxide.
Let's take a few big belly breaths while we think about the air we breathe in and out.
Model to students deep belly breaths, slowing inhaling and exhaling.

EXPLORADORES

The Carbon Cycle



EXPLORADORES

Exploring Terrific Trees

Step 6 *5 mins*

In the Quiet of the Trees https://vimeo.com/943467228

Explain to Students...
We are now going to listen to a poem called "In the Quiet of the Trees" by Kate Wakeling. As you listen, try to recognize any words you might now know the meaning of.

Play the video linked above or read the poem aloud to your students:

The forest is a special kind of still.

In the quiet of the trees.
I breathe deep as roots.

My mood grows as bright
as the light
that streams through leaves.

My thoughts open like buds.

I let my worries rest on softest moss.

The forest is a special kind of still
and in the quiet of the trees
I become
a special kind of me.

Discuss with Students...
Were there any words in the poem that you don't know the meaning of?
Students identify unknown words and discuss possible meanings.
What is this poem about?
Trees, quiet, people
How does the author feel when they are with the trees?
Calm, still, relaxed, special
How do you feel when you are with trees? When you are in a quiet place?
Calm, still, relaxed, peaceful, etc.

EXPLORADORES

Exploring Terrific Trees

Step 7 *3 mins*

Clarify & Close Out

Explain to students...
A pledge is when we make a promise. I am going to share with you a pledge from Celebrate Planet Earth. When you take this pledge, you are making a promise to help take care of our planet!

Recite the Planet Earth Pledge with Students...

No job is too big
No action too Small
For the care of the Earth
Is the Task of us all!

Closing Questions...

- What did you learn today?
- What are you excited to learn more about in the future?
- What kinds of observations did we make today?
- How can you continue observing the world around you?

Additional Activities

Breathing Bubbles: A Carbon Cycle Activity

Materials:

- ☐ A clear bowl
- ☐ A straw
- ☐ Liquid dish soap
- ☐ Water

Instructions:

- Make bubble solution: Fill the bowl with water and add a few drops of dish soap. Stir gently.
- Blow bubbles: Dip the straw into the bubble solution and blow gently. You'll see bubbles forming.
- Talk about breathing: Tell the kids that when we breathe in, we take in air, which includes oxygen.
- Blow more bubbles: Have the kids blow more bubbles. Explain that when we breathe out, we release carbon dioxide, just like the bubbles.

Discussion:

- Ask the kids if they can feel the air going in and out of their noses.
- Explain that plants use the carbon dioxide we breathe out to make food.
- Discuss how the carbon cycle is like a big game of tag, with carbon moving back and forth between plants, animals, and the air.

EXPLORADORES

Outdoor Learning Resources

General Outdoor Learning Curriculum Resources

Project Learning Tree (PLT)
https://www.plt.org
Environmental education curriculum with ready-to-go lesson plans for PreK–8.
Activities connect with science, reading, math, and art.

Project WILD
https://www.fishwildlife.org/projectwild
Hands-on wildlife-focused lessons aligned with standards.
Suitable for ages 3–12.

Teaching Outside the Classroom – NAAEE
https://naaee.org
Free resources and teaching guides for educators focusing on experiential, nature-based learning.

Creative Outdoor Integration

Green Schoolyards America – Outdoor Learning Activities
https://www.greenschoolyards.org
Ideas for math outside, garden science, outdoor reading circles.

The Muddy Puddle Teacher
https://themuddypuddleteacher.co.uk
UK-based, but full of great muddy, messy, playful outdoor lesson plans.

Wilderness Awareness School – Kamana for Kids
https://wildernessawareness.org
Nature connection games, journaling prompts, and tracking challenges.

EXPLORADORES

Outdoor Learning Resources

Activities & Games

Outdoor Classroom Day – Activity Bank
https://outdoorclassroomday.com/resources/
Tons of outdoor play and learning activity sheets sorted by age group.

Nature Play WA – Play Trail Cards
https://www.natureplaywa.org.au
Printable cards with easy games like stick races, animal tracking, and cloud stories.

Lesson Plans

Audubon for Kids – Birds & Nature Lessons
https://www.audubon.org/get-outside/activities/audubon-for-kids
Bird-focused lessons, DIY feeders, and observation logs.

National Wildlife Federation – Ranger Rick Educator Resources
https://rangerrick.org/educators/
Science and nature lesson plans, printable worksheets, and activity calendars.

LEAF Wisconsin K–12 Forestry Curriculum
https://www.leafwi.org
Forestry and tree-focused lessons for all grade levels, including outdoor investigations.

Other Cool Tools

iNaturalist & Seek App by iNaturalist
Kids can identify plants, bugs, and animals using photos.
Great for self-guided outdoor discovery.