

## Photo Description



This image shows a blue water pipe near a sidewalk next to a grassy area and water body. An orange traffic cone sits nearby, marking the area. Water is leaking or flowing from the pipe onto the ground, demonstrating how water moves and changes in our environment.

## Scientific Phenomena

**Anchoring Phenomenon:** Visible water leaking from a pipe and flowing across land into a water body.

**Why This Happens:** Water naturally flows downhill due to gravity. When a pipe breaks or leaks, the water inside is under pressure and escapes, following the slope of the ground toward lower areas. This demonstrates that water is a liquid that takes the shape of its container and flows freely. In Kindergarten terms: water moves and spreads out wherever it can go, and it always tries to flow downward.

## Core Science Concepts

- \* **Gravity and Movement:** Water and other objects naturally move downward due to an invisible force called gravity.
- \* **Water as a Liquid:** Water is wet, flows freely, and can spread across surfaces. It doesn't have a fixed shape—it takes the shape of whatever holds it.
- \* **Cause and Effect:** When a pipe breaks (cause), water leaks out and flows onto the ground (effect). Observing this helps children understand simple cause-and-effect relationships in nature.
- \* **Properties of Water:** Water is transparent (you can see through it), it's wet to the touch, and it moves to find the lowest place.

### Pedagogical Tip:

Use this image to build from direct observation before introducing abstract concepts. Ask children to describe what they SEE first (blue pipe, water, cone, grass) before explaining WHY it happens. This concrete-to-abstract progression matches Kindergarten cognitive development.

### UDL Suggestions:

**Representation:** Provide multiple ways to explore this concept. Some children may learn best through video observation of flowing water, while others benefit from hands-on exploration with water tables. Consider showing still images, slow-motion videos, and real-world observations.

**Engagement:** Connect the phenomenon to children's lives by asking, "Have you ever seen water leak from a hose?" or "What happens when you pour water?" This personal connection increases motivation and relevance.

**Action & Expression:** Allow children to demonstrate understanding through multiple modalities: drawing water flowing downhill, physically acting out water movement, or sorting pictures of water in different places (pipes, puddles, rivers, cups).

## Zoom In / Zoom Out

### Zoom In: Water Molecules in Motion

At a size too small to see, water is made of tiny, tiny pieces called molecules. These molecules are always moving and bumping into each other. When water flows from the pipe, billions and billions of these invisible water molecules are rushing down the slope together, all moving in the same direction. They stick together loosely, which is why water stays as one puddle instead of flying apart. Kindergarteners can understand this by imagining: "If you had a million, million tiny water dancers all holding hands and running downhill together, that's what happens inside the water!"

### Zoom Out: Water's Journey Through the Community

This leaking pipe is just one small part of a much bigger system that serves the whole neighborhood. Underground, pipes carry clean water from a treatment plant to every house and building. When pipes break (like in this photo), the water escapes and flows across the land, down into storm drains, ditches, and eventually into rivers, lakes, and the ocean. This same water will evaporate into clouds, fall as rain, and return to the treatment plant to be cleaned and used again. The orange cone helps keep people safe while workers fix the pipe so water gets to where it's supposed to go. Understanding this helps children see that water connects all of us and travels through many places in a cycle.

## Discussion Questions

1. "Where do you think the water is going?" (Bloom's: Understand | DOK: 1)
2. "Why did someone put an orange cone next to the pipe?" (Bloom's: Analyze | DOK: 2)
3. "What would happen if we built a wall to stop the water from flowing? What would change?" (Bloom's: Evaluate | DOK: 3)
4. "How is this water similar to water from your bathtub faucet or a water fountain?" (Bloom's: Analyze | DOK: 2)

## Potential Student Misconceptions

**Misconception 1: "Water disappears when it leaks."**

What children might think: When water flows away across the ground or into a drain, it vanishes completely and is gone forever.

Scientific clarification: Water doesn't disappear—it just goes somewhere else! The water flowing from this pipe moves downhill into the water body (the blue water on the right), or into the ground where plants drink it, or into drains that carry it to treatment plants. We can always find where water goes if we follow it. It keeps moving, but it's never truly gone.

**Misconception 2: "All pipes are the same and carry the same thing."**

What children might think: Every pipe does the same job and every pipe is safe to touch.

Scientific clarification: Different pipes carry different things! Some pipes carry clean drinking water (like in homes), some carry wastewater from sinks and toilets, and some carry stormwater from rain. The warning signs and orange cone in this photo tell us that this particular pipe needs attention and isn't safe right now. Workers wear special equipment and follow rules to stay safe around different kinds of pipes.

**Misconception 3: "Water flows in all directions equally."**

What children might think: Water can flow uphill just as easily as it flows downhill, or flow sideways with equal force.

Scientific clarification: Water has a favorite direction: downhill! Gravity always pulls water toward the ground. Without pushing it (like with a pump), water will never flow uphill on its own. In this photo, we can see the water naturally moving toward the lower ground and the water body. This pattern is true everywhere—water always "wants" to go down.

## Extension Activities

1. **Water Flow Exploration (Water Table Activity):** Set up a shallow water table with various containers, funnels, and tubes. Children pour water and observe how it flows. Tilt a flat pan and watch water move to the lower end. Ask, "Can you make water flow uphill?" (Answer: not without help!) This builds direct understanding of gravity's effect on water.
2. **Pipe Detective Walk:** Take children on a supervised walk around the school to find pipes, gutters, and water drains. Discuss where water goes and why those structures are there. Help them trace water flow paths on the ground or in pictures. This connects the phenomenon to real-world infrastructure.
3. **Water in Our World Sorting Activity:** Provide picture cards showing water in different states and locations (ice, puddles, rain, snow, running faucet, ocean). Children sort and discuss: "Is this water moving or still? Is it hot or cold? Where did it come from?" This reinforces water's properties and movement.

## Cross-Curricular Ideas

### Math Connection: Measuring and Patterns

Create a water flow investigation where children pour water down a tilted tray and measure (using non-standard units like blocks or hand-spans) how far the water travels. Make predictions: "If I tilt it more, will the water go farther?" Graphing the results (✓ marks on a simple chart) helps children see patterns and practice data collection skills while exploring cause and effect with water.

### ELA Connection: Storytelling and Vocabulary

Read *Come On, Rain!* by Karen Hesse, which uses beautiful language to describe water and weather. Have children dictate or draw a story: "What happened to the water that leaked from the pipe?" Create a class "water adventure" book where each child contributes one page following water's journey (pipe → ground → puddle → sun → cloud → rain → pipe again). This builds narrative skills and reinforces the water cycle vocabulary.

### Social Studies Connection: Community Helpers

Introduce the idea of water workers and infrastructure in the community. Discuss: "Who fixes broken pipes? Why is that an important job?" Invite a local water utility worker to visit (virtually or in-person) to show children tools and explain how they keep water flowing safely to homes and buildings. Children can create a thank-you card or draw pictures of water workers as community helpers, building appreciation for the people who maintain essential services.

### Art Connection: Water in Motion

Provide water, food coloring, and shallow trays at a slight angle. Children pour colored water down the slope and observe the flowing patterns, then paint or draw what they see. Create a collaborative mural showing water flowing through a community (pipes, rivers, puddles, clouds, rain). Children can use blue paint, watercolors, and collage materials to represent water's journey, developing fine motor skills and artistic expression while reinforcing scientific concepts.

## STEM Career Connection

### 1. Water Treatment Plant Operator

These workers make sure the water in our pipes is clean and safe to drink! They test the water, add safe cleaning chemicals, and watch big machines that filter out dirt and germs. When you turn on a faucet at home, a water treatment plant worker helped make that water safe. Their job is to keep millions of people healthy by protecting their water.

Average Annual Salary: \$48,000 USD

### 2. Plumber

Plumbers fix pipes like the broken one in this photo! They find leaks, replace broken pipes, and make sure water flows to where it needs to go in homes and buildings. If a pipe breaks in your school or house, a plumber comes to fix it quickly so you can have clean water again. This job keeps our water systems running smoothly.

Average Annual Salary: \$56,000 USD

### 3. Civil Engineer (Water Infrastructure Specialist)

These engineers design the big systems of pipes, pumps, and treatment plants that bring water to entire cities and towns. They figure out where pipes should go underground, how to fix flooding problems, and how to keep water moving safely through a community. They use math, science, and problem-solving to help millions of people have water.

Average Annual Salary: \$88,000 USD

## NGSS Connections

Performance Expectation:

K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface.

(Note: While this image primarily addresses water movement, it can extend to K-ESS2 concepts below.)

Disciplinary Core Ideas:

- K-PS2.A Forces and Motion (gravity and movement of water)
- K-ESS2.A Earth Materials and Systems (water and its properties)

Crosscutting Concepts:

- Cause and Effect (broken pipe !' water leaks and flows)
- Patterns (water always flows downward)

## Science Vocabulary

- \* Liquid: A type of matter (like water) that flows and spreads out, but keeps the same amount.
- \* Gravity: An invisible force that pulls things downward toward the Earth.
- \* Flow: The way water moves from one place to another, usually going downhill.
- \* Pipe: A tube (often made of metal or plastic) that carries water from one place to another.
- \* Leak: When water accidentally escapes from a pipe or container where it's supposed to stay.

## External Resources

Children's Books:

Water\* by Manya Stojic (explores water in the environment through African savanna context)  
Come On, Rain!\* by Karen Hesse (celebrates water and weather through sensory language)  
A Drop of Water\* by Walter Wick (stunning photography of water in different forms)

---

Implementation Note: This lesson works best when paired with direct sensory exploration. Use the image as a springboard for water table play, outdoor observation, and hands-on discovery. Kindergarteners learn by doing, so prioritize experiential learning over worksheet-based activities.