States Of Matter

Physical Science | Lesson Guide

1st Grade

Photo Description

This photo shows a blue fire hydrant and an orange traffic cone sitting near a sidewalk beside a canal or waterway. The water in the background appears calm and blue. These objects are placed on grass near concrete, showing what happens when water stays in one place outdoors.

Scientific Phenomena

Anchoring Phenomenon: Water exists in different places and forms in nature.

This image illustrates that water is present in our everyday environments—we can observe it in natural water bodies (the canal), and we can notice how human-made objects interact with these water sources. While not showing an obvious state change, the scene presents an opportunity to explore where water exists and how it behaves. Water in the canal is a liquid—it has a definite volume but takes the shape of its container (the canal). First graders can observe that liquids flow, move, and occupy spaces around solid objects (the hydrant, cone, and grass).

Core Science Concepts

- Liquids have a definite volume but take the shape of their container. The water in the canal flows and fills the space, but you cannot pick it up like a solid object.

- Solids keep their shape. The fire hydrant and traffic cone do not change shape—they stay the same whether they are near water or not.

- Water is found in many places in nature. Students can observe water in bodies like canals, ponds, rivers, and oceans.

- Objects interact with water. Some things float on water, some sink, and some stay dry when near water.

Pedagogical Tip:

For First Grade, avoid introducing complex state-change language like "evaporation" or "condensation." Instead, focus on observable, direct comparisons: "Is it a liquid or a solid? How do we know?" Use the hydrant and cone as touchstones—"Can you squeeze this cone? Can you squeeze water?" This concrete, tactile approach supports developmental readiness.

UDL Suggestions:

Multiple Means of Representation: Show photos or videos of water in different locations (puddles, rain, bathtubs, oceans). Allow students to sort pictures of "liquids" vs. "solids" to reinforce the concept visually and kinesthetically. Multiple Means of Action & Expression: Encourage students to sort classroom objects into liquids and solids using manipulatives or hand motions (make a "solid" shape with arms vs. flowing "liquid" movements).

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Discussion Questions

1. "What do you see in this picture? Where is the water?" (Bloom's: Remember | DOK: 1)

2. "How is the water different from the cone and the hydrant? How do we know?" (Bloom's: Analyze | DOK: 2)

3. "If we poured water into a cup, what would happen? Why is water different from this cone?" (Bloom's: Comprehend | DOK: 2)

4. "Where else have you seen water like this? Can you describe what it looks like?" (Bloom's: Apply | DOK: 2)

Extension Activities

1. "Solids and Liquids Hunt" – Take students on a short walk around the classroom or school grounds. Have them identify and point to things that are solids (toys, desks, cones, hydrants) and liquids (water fountains, puddles, paint water). Create a simple chart with pictures or drawings of what they find.

2. "Water in a Container Exploration" – Provide clear containers (cups, bowls) and water. Let students pour water from one container to another and observe that the water's shape changes but the amount stays the same. Ask, "Does the water look the same? Did the water disappear?"

3. "Sorting Game" – Gather various classroom objects (pencil, sponge, plastic cup, fabric) and a container of water. Ask students to predict which items are solids and which would change if water touched them. Test predictions together and discuss why some things absorb water while others don't.

NGSS Connections

Performance Expectation:
K-PS1-1: Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Disciplinary Core Ideas:
- K-PS1.A: Properties of Materials – Students observe that materials can be described by their properties (solid vs. liquid).

Crosscutting Concepts:
- Patterns – Students recognize that solids and liquids have predictable patterns of behavior.
- Structure and Function – The structure of a solid (holds its shape) serves a different function than a liquid (flows and fills space).

Science Vocabulary

- Liquid: A material that flows and takes the shape of what holds it (like water).
- Solid: A material that keeps its own shape and doesn't change (like a cone or hydrant).
- Water: A liquid that we drink and see in nature; it flows and fills spaces.
- Canal: A man-made waterway or channel that holds water.
- Property: A special way something looks, feels, or acts (like being hard, soft, wet, or dry).

External Resources

Children's Books:
- Water by Manya Stojic (explores water in nature and daily life)

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- Splash! by Flora McDonnell (simple, engaging story about water)
- Rain by Manya Stojic (water cycle introduction through illustrations)

YouTube Videos:
- "Liquids and Solids for Kids" – A short, animated introduction to the differences between liquids and solids. Approximately 3 minutes. https://www.youtube.com/watch?v=qe8bLEr5mJw
- "Water Everywhere" – Explores where water is found in nature, including rivers, oceans, and rain. Approximately 5 minutes. https://www.youtube.com/watch?v=xn-MfTp9xLw

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Final Note: This image provides a rich, real-world context for introducing the concept that materials have different properties. By grounding lessons in observable, familiar environments, you support First Grade students' natural curiosity and readiness for hands-on science exploration.

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