

STEAM Education & Leadership Workshops

Student Activity Lesson Plan - Saving Water, Saving the Future

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Age range

8-11 years old

Learning objectives

- Students will learn about the stages of the water cycle and their significance for life on Earth.
- Students will understand the importance of water conservation, both locally and globally, and identify practical ways to conserve water.
- Students will explore how climate change impacts the water cycle and water availability.
- Students will understand the connection between scientific concepts and real-world applications by investigating how water scarcity impacts both local and global communities.
- Students will gain awareness of future career paths by exploring how water conservation technologies are designed and implemented, making connections between classroom learning and STEM careers.
- Students will develop leadership and problem-solving skills by proposing actions to address water challenges in their community.

Structure of the lesson

- Introduction to water cycle (15 minutes)
- Experiment water cycle stages (20 minutes)
- Community Research and Discussion (25 minutes)
- Brainstorming Solutions (25 minutes)
- Global Connection (15 minutes)
- Reflection and closing (20 minutes)

Duration

2 Hours

Note to Educators

Make water conservation personal

Start with questions like, "Where does the water you drink come from?" to help students relate the topic to their everyday lives. This builds personal awareness before diving into scientific concepts.

Use hands-on learning for the water cycle

Conduct a water cycle experiment where students observe evaporation, condensation, and precipitation. Encourage them to discuss why the water cycle is crucial for plants, animals, and humans.

Connect science to real-world Issues

Highlight local water issues such as pollution, droughts, or flooding to make the lesson more relevant. Show maps or images of local rivers, lakes, or reservoirs to help students visualize these challenges.

Foster empathy and global awareness

During the Global Connection section, discuss regions facing extreme droughts or water scarcity. Ask thought-provoking questions like, "How do you think people in areas with little water feel?" to encourage empathy.

Encourage actionable problem-solving

In the brainstorming session, guide students to think of realistic ways they can save water at home and school. Examples include turning off taps while brushing teeth or collecting rainwater for plants.

Timing	Facilitator's actions	Students outcomes	Technical notes
0-15 mins	Introduction to Water Cycle (15 minutes): <ul style="list-style-type: none"> Slide 2: Title and Overview: Introduce the topic of the water cycle with a simple and engaging title, such as "How Water Travels Around Us." Include an image of the water cycle. Slide 3: Stages of the Water Cycle: Show a diagram of the water cycle with each stage labeled (evaporation, condensation, precipitation, collection). Include simple animations or arrows to show movement. Slide 4: Importance of the Water Cycle: Explain why the water cycle is crucial for life on Earth. Include examples like plants needing water, rainfall, and water storage. 	<u>Awareness:</u> Social Awareness, Sense of Identity, and Sense of Purpose. <p>Start by helping students recognize their unique experiences with water in their daily lives and in their community. During the community research, guide them to examine local water-related challenges, promoting an understanding of both local inequities and environmental concerns. Encourage students to reflect on their role in addressing these challenges, helping them identify their strengths in the context of the water conservation project</p>	<p>Start by asking students about their current knowledge of the water cycle and where they see water in their daily lives. Use their responses to relate the material to familiar experiences.</p> <p>Ask open-ended questions, such as "Where do you think rain goes after it falls?"</p>
16 - 35 mins	Experiment - Water Cycle Stages (20 minutes): <ul style="list-style-type: none"> Slide 5: Experiment Setup: Display the materials needed for the experiment (e.g., hot plate, water, cold surface). Provide instructions and a visual guide for students to understand the steps. Slide 6: Observing Evaporation and Condensation: Include step-by-step photos or illustrations showing the heating of water and the condensation forming on the cold surface. Highlight key observations students should make. 	<u>Mastery:</u> Critical Thinking, Foundational Skills, Core Knowledge (science focus) <p>During the experiment, students engage in critical thinking to understand water cycle stages. Guide them to analyze, evaluate, and reflect on their observations. In the brainstorming session, encourage students to create and evaluate water-saving strategies, allowing them to build and apply foundational knowledge to real-world problem-solving.</p>	<p>Assign specific roles (e.g., "observer," "recorder") to students to ensure everyone participates and stays engaged.</p>
36 - 50 mins	Community Research and Discussion (25 minutes): <ul style="list-style-type: none"> Slide 7: Local Water Issues: Introduce the concept of water scarcity or pollution in their local community. Show a map or image of a local water source (e.g., a river or lake) and highlight pollution problems. Slide 8: Group Activity Instructions: Provide clear instructions for students to work in groups and research a local water challenge. Include guiding questions like, "What are the main sources of pollution in our community?" or "How does this affect our water supply?" 	<u>Connectedness and Awareness:</u> Empathy, Compassion, Perspective-Taking, and Global-Mindedness <p>Encourage students to work collaboratively during the community research and pair activities. Facilitate discussions where they share diverse perspectives on water conservation, making connections between local and global water challenges. Emphasize empathy and global-mindedness by asking how they think communities with severe drought feel and the impact of water scarcity on people's lives.</p>	<p>Use a local example of a water source (e.g., a river or lake nearby) to make the discussion more relatable. Include images or maps to help students visualize the context</p> <p>Prepare guiding questions that students can use during their group work to stay on track. Consider offering additional resources like short articles or videos..</p>
51 - 75 mins	Brainstorming Solutions (25 minutes): <ul style="list-style-type: none"> Slide 9: Brainstorming Water Conservation Actions: Start with a slide that has images showing various ways to conserve water (e.g., fixing leaky taps, reducing shower time). Ask students what they see and how it helps. Pair Work Instructions: Detail the next activity where students work in pairs to come up with one personal action to conserve water. Include prompts like, "How can we reduce water use at school?" 	<u>Agency:</u> Problem-solving, Growth Mindset, and Collaboration. <p>During the brainstorming session, empower students to take initiative by proposing water-saving actions. Use this activity to foster self-efficacy and creativity, highlighting how each student's contribution can make a meaningful impact. In the reflection, allow students to set personal goals for water conservation and envision themselves as active contributors to their community's wellbeing.</p>	<p>Guide students to consider small actions they can take personally at home or school to make conservation feel accessible and impactful.</p>

76 - 90 mins	<p>Global Connection (15 minutes):</p> <ul style="list-style-type: none"> Slide 10: Climate Change and Water Scarcity: Introduce the idea of global water scarcity using an image of a drought-affected area. Include a map showing drought-prone regions worldwide. Slide 11: Solutions for Global Water Issues: Highlight possible global solutions (e.g., rainwater harvesting, desalination). Include pictures or diagrams of these technologies. Slide 12: Pair Activity - Global Solutions: Provide instructions for pairs to come up with their solutions. Include a prompt like, "What could help other countries have more water?" 	<p><u>Connectedness and Agency:</u> Problem-Solving, Empathy, Global-Mindedness, Growth Mindset</p> <p>In the "Global Connection" activities, students reflect on water scarcity's global impact, fostering empathy and global-mindedness as they discuss diverse perspectives. Working in pairs, they brainstorm simple, actionable solutions—like conserving water at school—which builds their sense of agency. By sharing their ideas, students gain confidence in their role in positive change, recognizing how small actions contribute to global solutions.</p>	<p>Use thought-provoking prompts such as, "How do you think people in drought-affected areas feel about water?" to foster empathy and global awareness.</p>
91 - 120 mins	<p>Reflection and Closing (20 minutes):</p> <ul style="list-style-type: none"> Slide 13: Facilitate a group discussion with the prompt "What did you learn today?" Gather students in a circle or an open space to share their thoughts collectively. Encourage students to reflect on what they found most interesting, and any challenges they face. Slide 14: Lead the class in reflecting on what they've learned during the session. Students will sit in a circle or open space, allowing each of them to share their insights, challenges, and the new actions they plan to take to conserve water. 	<p><u>Wellbeing:</u> Sense of Belonging, Security, and Optimism</p> <p>Facilitate a reflection circle where students can safely share their learning experiences, what they found inspiring, and any challenges they encountered. Create a supportive space that fosters a sense of belonging and optimism, allowing students to feel secure in expressing themselves and committing to positive actions for their environment.</p>	<p>Acknowledge each student's commitment to encourage them to carry their promises beyond the classroom.</p>

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