



Living with Drought

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Setting the Stage

This lesson explores how we are individually impacted by drought and the role that water plays in our lives, how systems in the Western United States are impacted by drought, and how to mitigate the impacts of drought.

Lesson Overview

In this lesson, students will play two rounds of scattergories to consider individual and systemic impacts of drought and will then work through a drought mitigation activity that offers multiple levels of action for students, schools, and communities.

Instructional Overview	
Grade Level	Middle/High School
Instructional Time	60 minutes
Driving Question	How do we experience and mitigate the impacts of drought?
Standards	NGSS included, see the “Standards” section at the end of this lesson for details.
Concepts	• Drought impacts individuals and systems • We can take steps to mitigate drought
Outcomes	Students will be able to: • Describe and offer examples of the ways in which drought impacts individuals and systems • Identify multiple steps we can take to mitigate drought
Materials	☐ Computers or tablets and an internet connection for students to use
Vocabulary	<u>Drought</u> —A deficiency of moisture that results in adverse impacts on



	people, animals, or vegetation over a sizeable area. (NOAA definition) <u>Resilience</u>- The ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events. (National Academies of Science definition) <u>Mitigation</u>- The effort to reduce loss of life and property by lessening the impact of disasters. (NOAA definition for hazard mitigation)
DEI/human rights connections	• Drought impacts humans and ecosystems but more privileged people and communities have a wider range of choices to respond to drought and other environmental challenges by virtue of their resources.

II. Activity 1 (30 min.)

Watch the following video in which Indigenous people describe witnessing drought:

<https://rmpbs.pbslearningmedia.org/resource/nasa09.sci.life.eco.witness/witnessing-environmental-changes/>

Take a moment to brainstorm all of the ways our lives are connected to water and are/could be impacted by drought.

Engage: Using the video and the brainstorming activity, spark students' interest on the topic.

Scattergories (2 rounds)

Divide students into groups of two to five. Explain the game: They will be given a category and their goal is to create a list of five items that they don't think any other group will think of in that category. They will only be given points for unique answers. Each round, they will only have two minutes to brainstorm. At the end of the round, have one representative come up and write the group's answers on the board.

Example: (This will also be the category you use for the first round)

Question: Which of our daily (or almost daily) activities are connected to water?



Group 1:

Staying hydrated

Brushing your teeth

Showering

Eating food (grown with water)

Having pets (who need water)

Points: 2 (or 3)

Group 2:

Swimming

Cooking

Cleaning the house

Doing the dishes

Fishing

Points: 4

Group 3:

Doing the dishes

Showering

Brushing your teeth

Using paper (that takes water to produce)

Growing food

Points: 1 (or 2)

In this round, group two wins because they have the most unique answers. You can keep track of scores through the rounds or start over each round. Some answers may spark some debate, such as the answer highlighted in yellow in groups one and three. If there is a debatable answer, the teacher should ask the group that provided the answer to specify what they meant and based on their answer decide if they get the point.

Round 2: Begin by reading this Department of the Interior press release on the current state of the Colorado river system:

<https://www.doi.gov/pressreleases/interior-department-announces-actions-protect-colorado-river-system-sets-2023>

Take a minute to brainstorm answers to the following question: What could this drop in Lake Powell and Lake Mead mean for us, and for the nation?

Scattergories round two – play a second round based on the rules described above and focus on the following question: How does our society depend on water?



Explore: Students can explore the subject of how individuals and communities use water while playing Scattergories.

Explain: Take time after the game to discuss the most pressing water issues locally and regionally.

Activity 2: How can we mitigate the impacts of drought?

Activity Taken From the HEART Force Colorado Drought Curriculum-
<https://cires.colorado.edu/outreach/resources/lesson/colorado-drought-0>

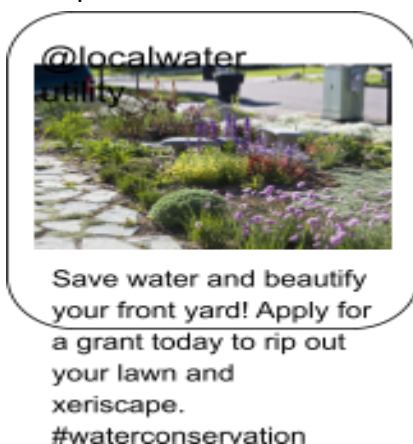
Google doc version:

https://docs.google.com/document/d/1S6m4V189v4f_vOtXGSc4-U0V3l0gmY7pdaNQMxAmsz0/edit

How can we mitigate the impacts of drought?

Imagine you are currently in a drought, and you worked for the local water utility, or a board member on the local water conservation board. Put together a social media post, including a photo and a short description (no more than 280 characters) to advertise a drought resilience strategy you plan to implement.

Example:



Choose from the list of strategies below, and find resources to learn more about the strategy beneath each strategy.

Resilience Strategies



- Educational outreach to farmers/ranchers on improving soil health
 - [USDA Soil Health Practices](#)
 - [Sustaining Farming in the Arid West: Stories of Young Farmers, Water and Resilience](#)
- Establish a drought planning board to recommend policies for water reduction
 - [Colorado Water Conservation Board Municipal Drought Management Plan Guidance Document](#), page 15-17 (Drought Planning Committee Section)
- Increase forest management to remove dead brush and trees
 - [Managing Forests in the Face of Drought - There is Help!](#)
- Improve water infrastructure such as replacing leaking pipes and inefficient sewers
 - [Water Audits and Water Loss Control for Public Water Systems](#)
- Build a new wastewater recycling facility
 - [Basics of Water Reuse](#)
- Public health and mental stress awareness campaign
 - [The Human Element: Weathering Tough Times in Drought](#)
- Build a new water storage reservoir
 - [Storing and Moving Water](#)
- Campaign to promote water-efficient crops
 - [Seasonal Water Needs and Opportunities for Limited Irrigation for Colorado Crops Fact Sheet](#)
- Direct economic incentives to reduce water use in homes/businesses
 - [Watering a Home Landscape During Drought Fact Sheet](#)
 - [Water Conservation In and Around the Home Fact Sheet](#)
- Grants to farmers/ranchers who encounter drought conditions
 - [Southern Colorado farmers and ranchers eligible for drought assistance](#)
 - [USDA Disaster Assistance Programs](#)
- Grants for water-saving measures such as rain barrels and low-water landscaping
 - [Xeriscaping: Creative Landscaping Fact Sheet](#)
- Develop integrated pest-management, irrigation and fertilization plans for farms and rangelands
 - [Sample Drought Plans](#)

Evaluate: As an assessment for this section, have students actually post their work to a social media account or just share as a class.

Standards:



Next Generation Science Standards:

HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

Disciplinary Core Ideas

ESS3.B: Natural Hazards

Natural hazards and other geologic events have shaped the course of human history; [they] have significantly altered the sizes of human populations and have driven human migrations. (HS-ESS3-1)

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Find more curriculum here:

<https://cires.colorado.edu/outreach/programs/right-here-right-now-global-climate-summit>