

Lesson 2: **Weather to the Max**

Essential Question: What are some types of extreme weather?

Materials: **Student Worksheet D: Battling Extreme Weather**, Internet access, computer and projector or interactive whiteboard, three to four different types of grass seeds (some drought-resistant and some not), plastic containers for planting, potting soil, marker, water, paper, colored pencils or crayons

Time Recommended: 45 minutes, plus several days for experiment

Engage: **Become Weather-Wise**

1. **Before** the lesson, search for pictures on the Internet that show the following examples or outcomes of extreme weather: a hurricane, a heat wave, a dust storm, a drought, a flood, and a wildfire (lengthier and more severe wildfires are considered an effect of extreme weather because they've been linked to hotter-than-average temperatures and reduced precipitation).
2. **Display** the images using a computer and projector or interactive whiteboard. Have students identify what is happening in the pictures. Create a chart to compare the different types of extreme weather and the negative impacts each can have on communities.
3. **Explain** that some regions' climates make them more prone to certain types of extreme weather, such as droughts in the Southwestern U.S. and hurricanes along the Gulf Coast. Ask: *Have any types of extreme weather or their effects impacted your community?*
4. **Guide** students to research past extreme weather occurrences in their community. As a class, discuss the information students uncover.

Explore: **Planting for Extremes**

5. **State** that living landscapes can play a valuable role in protecting communities against some forms of extreme weather.
6. **Perform** the following experiment to illustrate this point. Students will test how well grass plants hold up during a drought. As a class:
 - Plant different types of grass seeds in separate containers. Label each container with the corresponding type of grass it contains.
 - Water the seeds every other day until the grass has started to grow (about a week). Then stop watering the plants completely. This will simulate conditions during a drought.
7. **Have** students observe and record what happens to the plants without water over the following days.

Explain: **Helpful Living Landscapes**

8. **Discuss** what happened during the experiment. Ask: *Which grass plants survived the longest without water? Why might these plants be useful during times of drought?*
9. **Explain** that when it comes to creating living landscapes, it's important to choose the right plants for the right place. For example, some of the grasses you planted were drought-resistant—they can survive drier conditions better than other types of grass.
10. **Distribute** **Student Worksheet D: Battling Extreme Weather** to students. It will help them learn about more ways living landscapes can aid communities when weather turns severe.

Elaborate and Evaluate: **Safeguarding Your Community**

11. **Work** as a class to locate an area in your community that could be affected by one of the types of extreme weather from the activity. For example, find a bare patch of land that could experience flooding during heavy rains. Based on what students have learned, have them consider how a living landscape could lessen extreme weather's impacts in that area.
12. **Provide** students with paper and colored pencils or crayons. Have students use the materials to design a living landscape for the vulnerable area they identified. Along with their drawing, have students write a short essay explaining how their design could help the area.

Name: _____

BATTLING EXTREME WEATHER



WE NEED YOUR HELP! Heat Freak, Dr. Runoff, Carbon Creep, and Dust Demon are stirring up trouble. Whenever extreme weather hits, these bad guys are sure to also be around.

But wait! TurfMutt & the Outdoor Powers have come to the rescue! We know living landscapes can help lessen the effects of extreme weather. The right plants can help stop these environmental villains in their tracks. Let's find out more!



Dust Be Gone: During droughts, the ground dries out and becomes dusty. Dust Demon pops up and blows dust into the air. But plant roots help hold soil in place. They cut down on this type of erosion.



Not-So-Fast Flood: Storms can bring heavy rain. Dr. Runoff boosts flooding as the water runs off bare ground. But plants can act like a giant sponge. They suck up and slow down moving water that otherwise could turn into a flood.



Clean Air, Cooler Planet: Burning fossil fuels produces carbon dioxide gas. It traps heat in Earth's atmosphere, causing temperatures to rise. But grasses and other plants soak up carbon dioxide from the air. That helps cool the planet. Take that, Carbon Creep!



Summer Cooldown: The sun bakes streets, parking lots, and sidewalks. This causes cities to heat up. That's bad news when it's already dangerously hot outside. Plants have the opposite effect. They shade and soak up heat to keep areas cool and combat Heat Freak.

