

Lesson Overview

How many days are needed to teach this lesson?	3 days, 60 minutes per period
Grade Level(s)	8th
Subject(s)	Science
Lesson Summary	Students will learn how climate change impacts Arizona, explore local and national news stories, and develop action plans to address environmental issues in their community.
Standards	Arizona Science Standards (2018) – Middle School Strand: Earth and Space Science (ESS) Core Ideas & Standards: • ESS3.C1-06: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. • ESS3.C1-07: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. • ESS3.C1-08: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. Strand: Engineering, Technology, and Applications of Science • ETS1.C1-06: Define a design problem that can be solved through the development of an object, tool, process, or system and includes criteria and constraints. • ETS1.C1-08: Integrate scientific knowledge to develop a solution to a real-world problem through the use of models or simulations.
Focus Pulitzer Center news story and news outlet	“ State of Change ” by Paula Edelson, Frank Graff, Rossie Izlar, Michelle Lotker, Melissa Salpietra, and Justine Schmidt

	“The River That Disappeared – and the Tribe Bringing It Back” by Michelle Lotker “On the Navajo Nation, A Life Without Water” by Richard Tsong-Taatarii for <i>Searchlight New Mexico</i> “The Future of Solar: Can Crops and Solar Panels Coexist?” by Michelle Lotker for PBS North Carolina (Pulitzer Center) “Sheep and Solar: A Perfect Match” by Michelle Lotker for PBS North Carolina (Pulitzer Center) “Solar Energy in Rural North Carolina” by Michelle Lotker for PBS North Carolina (Pulitzer Center) “Conserving Land To Increase Climate Resiliency” by Michelle Lotker for PBS North Carolina “Cultivating a “Paradise Garden” in the Face of Climate Change” by Michelle Lotker for PBS North Carolina “To Till or Not To Till?” by Michelle Lotker for PBS North Carolina
Theme/idea/issue connecting the Pulitzer Center article to your community	Droughts, Heatwaves, Wildfires, Water Shortages
What additional news outlet(s) in your city/state/region will students learn about in the learning experience?	“AZ drought persists: 'You can't get much lower than this,' experts say of snowmelt” by Hayleigh Evans “Arizona cities dealing with water issues as megadrought continues: here's what you need to know” by Steve Nielsen, Nicole Garcia, Justin Lum and Kenneth Wong “Arizona's farmers are feeling the squeeze of water shortages on the Colorado River” by Lauren Rainson

	“Drought, water overuse prompt Arizona to limit construction in some fast-growing parts of Phoenix” by Jacques Billeaud and Suman Naishadham “USDA announces \$100 million solar power investment for Navajo Tribal Utility Authority (KJZZ Phoenix News)” by Gabriel Pietrorazio “U of A research looks at how solar energy in agricultural areas increases production for both (AZ Family News)” by Mickaela Castillo “Valley teens working on project to bring sustainable energy to Glendale elementary school (Fox10 Phoenix)” by Bailey Miller “Tribes in Arizona awarded funding to build climate resilience” (AZ Mirror) by Shondiin Silversmith “Researchers look to solve food production challenges due to climate change (ABC15)” by Jamie Warren “This Hopi dry farmer is trying to safeguard seeds from threats of climate change, commercialization” (KJZZ Phoenix News) by Gabriel Pietrorazio
Content Advisory (optional)	This lesson may contain some information that may be emotionally activating for students.
Notes on Context	My students are primarily White Mountain Apache, and incorporating Apache cultural perspectives is vital. I embed traditional knowledge, community stories, and relevant historical and contemporary issues into STEM lessons—this helps make the content more meaningful and respectful to their identity. For example, when teaching about solar energy, I connect it with the traditional Apache reverence for the sun and its role in seasonal rhythms and ceremony. Many students are emergent bilinguals, with English as a second language, so I include visual support, simplified language, and explicit vocabulary instruction. I also use language scaffolds, like sentence frames and word walls, and incorporate opportunities for oral

	language development through discussion and storytelling, which is culturally aligned.
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Lesson Day 1: “Climate Change Hits Home: Reading the Local Signs”

Lesson Objective(s) or Essential Question(s)
Lesson Objective(s): • Define climate change and describe its causes and global effects. • Analyze how climate change impacts Arizona (e.g., drought, wildfires). • Evaluate how local news helps communities understand global climate issues. • Build student interest and confidence in interpreting regional journalism. Essential Question(s): • What is climate change, and what causes it? • How does climate change affect our state and local community? • How does local journalism connect global issues to the people who are impacted?
Focus Pulitzer Center News Story/Stories
“State of Change” by Paula Edelson, Frank Graff, Rossie Izlar, Michelle Lotker, Melissa Salpietra, and Justine Schmidt “The River That Disappeared – and the Tribe Bringing It Back” by Michelle Lotker “On the Navajo Nation, A Life Without Water” by Richard Tsong-Taatarii for <i>Searchlight New Mexico</i>
Lesson Steps
Materials: • Satellite images of Arizona reservoirs (NASA Earth Observatory) or actual photos of Lake Powel: Full Vs Depleted • Articles: ◦ “The River That Disappeared – and the Tribe Bringing It Back” by Michelle Lotker for PBS North Carolina (Pulitzer Center) ◦ “AZ drought persists: 'You can't get much lower than this,' experts say of snowmelt” by Hayleigh Evans • Guided Article Analysis Worksheet

- Digital or poster creation tools
- Exit Ticket Prompt
- [Poster or Slide Presentation Rubric](#)

1. Engage (10 min)

- Compare satellite or actual photos of Lake Powell: full vs. depleted.
- Think-pair-share: “What might have caused this change?”
- Transition: “These changes are part of a global issue—but let’s see how our local news helps us understand it here in Arizona.”

2. Explore (15 min)

- Students read both articles (Pulitzer Center & AzCentral) in pairs.
- Complete the [Guided Article Analysis Worksheet](#): As students read, they identify causes, local impacts, and quotes from community voices.

3. Explain (15 min)

- Group discussion: What are the key takeaways from each article?
 - Highlight how climate change is affecting local communities (e.g., tribal lands, agriculture, water supply).
- Emphasize the role of journalists in bringing these stories to light. Use the following questions to deepen the discussion:
 - Why do you think these journalists chose to write these stories for these outlets?
 - What do you think their goal was in sharing these stories?
 - How can journalists help us stay informed about global issues?
 - Do you engage with news to stay informed about important issues? Why or why not?

4. Elaborate (15 min)

- Students create a digital slide or poster answering: “How does local news help us understand global issues like climate change?”
- Students should include evidence from both articles and student reflections.

5. Evaluate (5 min)

- Exit Ticket: “What is one way climate change has affected your community or family?”

Performance Task(s)
Students will create a visual product—either a digital slide or poster—that explains how climate change is impacting Arizona and how local journalism helps us understand and respond to these global issues.
Assessment
• Guided Article Analysis Worksheet • Poster/Slide Rubric • Exit Ticket response

Lesson Day 2: “Solar Solutions: Local Energy, Global Impact”

Lesson Objective(s) or Essential Question(s)
Lesson Objective(s): • Explore how solar energy and sustainable land use practices support climate solutions. • Make connections between local solar efforts (e.g., Navajo Nation) and national/global trends. • Build confidence in engaging with journalism from Arizona and beyond. • Evaluate how communities are taking action through policy and innovation. Essential Question(s): • How is solar energy being used sustainably in Arizona? • How can we use land and energy in ways that respect culture, nature, and community needs? • How do local stories about energy empower us to take action?
Focus Pulitzer Center News Story/Stories
“State of Change” by Paula Edelson, Frank Graff, Rossie Izlar, Michelle Lotker, Melissa Salpietra, and Justine Schmidt “The Future of Solar: Can Crops and Solar Panels Coexist?” by Michelle Lotker for PBS North Carolina (Pulitzer Center) “Sheep and Solar: A Perfect Match” by Michelle Lotker for PBS North Carolina (Pulitzer Center) “Solar Energy in Rural North Carolina” by Michelle Lotker for PBS North Carolina (Pulitzer Center)
Local News Story/Stories
“USDA announces \$100 million solar power investment for Navajo Tribal Utility Authority (KJZZ Phoenix News)” by Gabriel Pietrorazio “U of A research looks at how solar energy in agricultural areas increases production for both (AZ Family News)” by Mickaela Castillo

[“Valley teens working on project to bring sustainable energy to Glendale elementary school \(Fox10 Phoenix\)”](#)
by Bailey Miller

Lesson Steps

Materials

- [Guided Article Analysis Worksheet](#)
- Venn Diagram handout
- [Solar Solution Design Rubric](#)

1. Engage (10 min)

- Show images of solar installations on farms, schools, and tribal lands.
- Ask: “What do you notice? Can land be used for multiple purposes at once?”
- Relate students’ responses to Arizona’s climate and land use.

2. Explore (15 min)

- Jigsaw Reading: Each student is assigned one article to annotate with the [Guided Article Analysis Worksheet](#).
- Share findings in pairs: students connect in pairs to compare solutions, settings, and outcomes.

3. Explain (10 min)

- Whole-group compare/contrast: How do Arizona and North Carolina approach solar differently?
- Focus the discussion on climate, land type, and cultural considerations.

4. Elaborate (15 min)

- Students complete a Venn Diagram comparing their article to a local Arizona solar project.
- Discuss the role of young people, tribes, and schools in pushing solar innovation.

5. Evaluate (10 min)

- Exit Ticket: “How could solar energy be used in your neighborhood or school to support the environment?”

Performance Task(s)

Students will design a local agrivoltaic solution, such as a solar-powered school garden, shaded community crops, or grazing spaces beneath solar panels. Students will present the solution as either a sketch or infographic that addresses both energy and agricultural needs in their community.

Assessment

- Article Worksheet
- Venn Diagram
- Exit Ticket

Lesson Day 3: “From the Ground Up: Restoration & Civic Action”

Lesson Objective(s) or Essential Question(s)
Lesson Objective(s): • Identify climate-related land and water issues affecting Arizona. • Analyze how restoration efforts and civic participation build community resilience. • Foster student voices and develop civic action plans rooted in evidence and local reporting. • Empower students to act with informed, locally relevant ideas. Essential Question(s): • How do local land and water restoration efforts help communities adapt to climate change? • What can we do in our community to protect the environment? • How does local journalism inspire civic action?
Focus Pulitzer Center News Story/Stories
“State of Change” by Paula Edelson, Frank Graff, Rossie Izlar, Michelle Lotker, Melissa Salpietra, and Justine Schmidt “Conserving Land To Increase Climate Resiliency” by Michelle Lotker for PBS North Carolina “Cultivating a “Paradise Garden” in the Face of Climate Change” by Michelle Lotker for PBS North Carolina “To Till or Not To Till?” by Michelle Lotker for PBS North Carolina
Local News Story/Stories
“Tribes in Arizona awarded funding to build climate resilience” (AZ Mirror) by Shondiin Silversmith “Researchers look to solve food production challenges due to climate change (ABC15)” by Jamie Warren

“[This Hopi dry farmer is trying to safeguard seeds from threats of climate change, commercialization](#)” (KJZZ Phoenix News) by Gabriel Pietrorazio

Lesson Steps

Materials

- [Source Credibility Checklist](#)
- Civic Action Brainstorm Sheet
- [Civic Action Plan Rubric](#)

1. Engage (10 min)

- Show photos of restoration projects on tribal lands in Arizona (White Mountain Apache, Hopi, etc.).
- Prompt for discussion: “How is restoring land part of climate action?”

2. Explore (15 min)

- Students read one focus article and complete the [Source Credibility Checklist](#).
- Focus on: What’s the problem? What solution is being implemented? Who is involved?

3. Explain (10 min)

- Class discussion: How do gardens, trees, and seed saving help our future?
- Emphasize tribal resilience, local knowledge, and journalism’s role in lifting these stories as part of the discussion.

4. Elaborate (15 min)

- Students use an educator-generated brainstorm sheet and the civic action plan rubric to begin creating their civic action plans.
- Encourage personal and local relevance—school garden? Community PSA? Youth letters to local leaders?

5. Evaluate (10 min)

- 1-minute share-out: Each student pitches a civic action idea and explains how it connects to the articles.

Performance Task(s)

Students will create a **Civic Action Plan** that addresses a local impact of a global issue—such as food insecurity,

energy access, or climate change—using information gathered from local news articles and class discussions.

Civic Action Plan Components:

1. **Issue + Evidence from Article:**
Identify a specific local issue tied to a global problem and support the explanation of the issue with evidence from a credible news source.
2. **Proposed Action:**
Suggest a realistic and meaningful solution or response—such as organizing a school garden day, starting a solar awareness campaign, or partnering with local farmers.
3. **Timeline and Resources:**
Provide a basic implementation plan with steps, a timeline, and needed resources.
4. **Community Benefit:**
Explain how the proposed action supports or strengthens the local community. Consider the following questions:
 - a. How does your proposed solution support or strengthen your local community?
 - b. In what ways could it improve people’s lives or address community needs?
 - c. Who in the community might benefit the most from your idea?

Assessment

- Source Credibility Checklist
- Civic action plan rubric
- 1-Minute Share Pitch