



GeoCivics Civic Action Plan: How *Extreme Heat Impacts Schools*

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Teacher(s) N. McClure	Lesson title: How Extreme Heat Impacts schools: Civic Action	Grade Level: 3rd
<p>Notes: This lesson will take multiple days to complete with an after-school group or committee, or a group of students within the classroom with a common concern about how the increase in extreme heat days affect learning in school.</p>		
<p>Pre-existing Knowledge: Students should have a general idea of what civic action is. By third grade, children typically have a basic understanding of weather and some concepts related to climate change, depending on what they've been taught in school or learned from their environment. Here are some general ideas third graders might have about extreme heat and climate change:</p> <ul style="list-style-type: none"> ● <u>Weather vs. Climate:</u> They understand that weather refers to day-to-day conditions (like hot, cold, rainy) and that climate refers to long-term patterns (like summers being generally hot). ● <u>Extreme Heat:</u> They may know that extreme heat refers to very hot temperatures that can be uncomfortable or dangerous. They might relate it to experiences they've had during hot days. ● <u>Seasons:</u> They likely understand the concept of seasons and that summers are typically hotter than winters. ● <u>Environmental Changes:</u> They might have heard about changes in the environment, such as glaciers melting or polar bears losing their habitat, though they may not fully grasp the connection to climate change. ● <u>Causes of Climate Change:</u> Some might have heard that cars, factories, and cutting down trees contribute to something called "global warming" or "climate change," although their understanding of the mechanisms might be limited. ● <u>Effects of Climate Change:</u> They might have heard about how climate change can affect animals, plants, and people, such as causing extreme weather events or changes in habitats. ● <u>Basic Solutions:</u> They may have been introduced to simple ideas like recycling, saving energy, or planting trees to help the environment, though their understanding of these actions' impact on climate change might be simplistic. ● <u>Media and Pop Culture:</u> Depending on exposure, they might have seen cartoons, books, or news segments that touch on climate-related topics, which could influence their understanding. 		

It's important to note that individual knowledge varies widely based on exposure, education, and interest. Some children might be quite knowledgeable if they've been actively engaged in learning about environmental issues, while others might have very limited exposure.

Overview

The science behind this lesson involves educating 3rd-grade students about the physiological impacts of extreme heat on humans and potentially other living organisms like animals and plants. Temperature extremes most directly affect health by compromising the body's ability to regulate its internal temperature. Loss of internal temperature control can result in various illnesses, including heat cramps, heat exhaustion, heatstroke, and hyperthermia from extreme heat events. By understanding the dangers of heat-related illnesses, students gain awareness of personal safety measures like hydration and seeking shade. The lesson also emphasizes civic action, encouraging students to apply their knowledge to improve community resilience to extreme heat. This includes practical actions such as water conservation, tree planting for shade, and advocating for adjustments in school policies to ensure safe outdoor activities during hot weather. By integrating these components, the lesson not only promotes individual well-being but also cultivates a sense of responsibility towards environmental stewardship and community care among young learners.

National & State Social Studies Standard(s)

Arizona State:

By applying economic reasoning, individuals seek to understand the decisions of people, groups, and societies.

- **3.E2.1** Explain how availability of resources affects decision making in Arizona with respect to water and other natural resources.

National:

- **Theme 3:** The study of people, places, and environments enables us to understand the relationship between human populations and the physical world. Students learn where people and places are located and why they are there. They examine the influence of physical systems, such as climate, weather and seasons, and natural resources, such as land and water, on human populations.

National & State Geography Standard(s):

National:

- Standard 13: How the forces of cooperation and conflict among people influence the division and control of Earth's surface.
- Standard 14: How human actions modify the physical environment.

Arizona State Geography Standards: Examining human population and movement helps individuals understand past, present, and future conditions on Earth's surface.

- The use of geographic representations and tools helps individuals understand their world.
3.G1.1 Use and construct maps and graphs to represent changes in Arizona over time. Key

concepts include but are not limited to distinct physical and cultural characteristics of Arizona including landforms, the 5C's, climate zones, elevations, plants, animals, Arizona's 22 Indian Nations, diverse ethnic, racial, and religious cultures

- Human-environment interactions are essential aspects of human life in all societies. 3.G2.1 Explain how people modify and adapt to the Arizona environment. Key concepts include but are not limited to modification and adaptation of the environment by Paleo-Indians, Prehistoric-Indians, explorers, settlers, farmers, immigrants, migrants, and the 22 Arizona Indian Nations, and the use of Arizona's natural resources.

Purpose:

Developing a civic action group focused on extreme heat in an elementary school serves several important purposes, which collectively contribute to the students' education, community involvement, and societal impact. Developing a civic action group focused on extreme heat in an elementary school not only addresses immediate environmental and health concerns but also nurtures a generation of informed, responsible, and engaged citizens who are prepared to tackle broader societal challenges in the future.

- Education and Awareness: By engaging students in discussions and activities related to extreme heat, the group helps raise awareness about the environmental and health impacts of high temperatures. This education empowers students with knowledge about climate-related issues from an early age.
- Promotion of Safety and Well-being: The group's activities can emphasize the importance of safety measures during hot weather, such as staying hydrated, seeking shade, and recognizing signs of heat-related illnesses. This promotes the well-being of students and encourages proactive health practices.
- Development of Civic Responsibility: Participating in a civic action group teaches students the value of taking responsibility for their community and environment. They learn that even small actions, such as creating educational materials or organizing community events, can contribute to larger societal goals.
- Practical Application of Learning: Through planning and executing projects related to extreme heat, students apply their academic knowledge in real-world contexts. This hands-on approach enhances their understanding of environmental science, social studies, and practical skills such as teamwork and leadership.
- Community Engagement and Collaboration: The group fosters collaboration among students, teachers, parents, and the broader community. It encourages partnerships with local organizations, experts, and policymakers who can provide guidance and support for initiatives aimed at addressing climate challenges.
- Long-term Impact and Sustainability: Engaging in civic action at a young age instills a sense of environmental stewardship and encourages lifelong habits of sustainable living. Students learn that their actions can contribute to creating a more resilient and environmentally conscious community.
- Empowerment and Advocacy Skills: By participating in discussions, presentations, and advocacy efforts, students develop confidence in expressing their ideas and advocating for causes they

care about. This prepares them to be active citizens who can contribute positively to society throughout their lives.

ELA Standards (To teach/review and support emergent multilinguals (EMLs) English language development):

- Cultivate relationships and be culturally responsive.
- Teach language skills across the curriculum.
- Emphasize productive language.
- Speak slowly – and increase the wait time.

3rd grade Arizona ELA standards

- **3.W.1** Write opinion pieces on topics or texts, using reasons to support one's point of view. a. Introduce the topic or text, state an opinion, and create an organizational structure that lists reasons. b. Provide reasons that support the opinion. c. Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons. d. Provide a concluding statement or section.
- **3.W.7** Conduct short research projects that build knowledge about a topic.
- **3.SL.3** Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
- **3.SL.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

ISTE Student Standard: 1.3 Knowledge Constructor

- **1.3c** - Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

Language Function:

In a civic action lesson about extreme heat days for 3rd graders, several language functions can be embedded in lesson discussions to build deeper understanding while supporting language development. These language functions are crucial for helping students articulate their thoughts, collaborate effectively, and deepen their understanding of the topic. Here are some key language functions and how they can be integrated:

- Describing - Example Discussion: Encourage students to describe what extreme heat feels like and how it affects people and the environment. This helps in building vocabulary related to temperature, weather conditions, and sensory experiences.
- Explaining - Example Discussion: Have students explain why it's important to stay cool during extreme heat days. This helps them articulate reasons and causes, linking personal actions to broader concepts of health and safety.
- Comparing and Contrasting - Example Discussion: Discuss how extreme heat differs from normal hot weather days. Compare the effects of extreme heat in different environments (e.g., urban vs. rural areas) or on different groups (e.g., elderly vs. children).

- Predicting - Example Discussion: Ask students to predict what might happen if a community doesn't prepare for extreme heat days. This encourages critical thinking about potential consequences and the importance of proactive measures.
- Problem-Solving - Example Discussion: Engage students in brainstorming solutions to help their community stay safe during extreme heat. Guide them to think about practical actions and their feasibility.
- Justifying - Example Discussion: Have students justify why certain safety measures (like drinking water or staying in shaded areas) are effective during extreme heat. This encourages them to provide reasons and evidence to support their ideas.
- Reflecting - Example Discussion: After completing a civic action project (e.g., creating posters about heat safety), ask students to reflect on what they learned and how their actions could make a difference. This supports metacognitive skills and reinforces learning outcomes.
- Integrating Language Development: Vocabulary Building: Introduce and reinforce vocabulary related to extreme heat, climate, safety measures, and civic engagement through discussions and activities.
- Active Listening: Encourage active listening and turn-taking during discussions to foster communication skills and respectful dialogue.
- Collaborative Learning: Promote group work and collaborative projects where students can practice sharing ideas, negotiating roles, and working towards a common goal.
- Writing and Presenting: Provide opportunities for students to write about their understanding of extreme heat days or present their civic action projects to peers or the school community, developing their writing and public speaking skills.

By embedding these language functions into lesson discussions, educators can support both deeper understanding of the topic and language development among 3rd graders, fostering a holistic approach to learning about civic responsibility and environmental awareness.

Culturally Responsive Lesson Strategies:

To make a lesson on civic action regarding extreme heat days in elementary school more culturally responsive, it's important to consider the diverse backgrounds and experiences of students. Here are some strategies and instructions you could incorporate:

1. Cultural Context and Relevance - Instruction: Begin by discussing how different cultures may have different practices or beliefs related to weather and staying cool. Encourage students to share their own experiences and family practices during hot weather. Strategy: Incorporate literature, stories, or examples from various cultures that relate to environmental stewardship or community resilience in response to extreme weather.
2. Inclusive Language and Representation - Instruction: Use language and examples that are inclusive of various cultural backgrounds. Ensure that images, materials, and examples used in the lesson reflect diversity. Strategy: Include stories or examples from diverse cultural perspectives when discussing community responses to extreme heat. Highlight how different communities around the world adapt to extreme weather conditions.
3. Community Engagement and Input - Instruction: Encourage students to investigate and discuss how different communities in their area or around the world prepare for extreme heat days. This can include traditions, resources, or community-led initiatives. Strategy: Invite guest speakers

from diverse backgrounds, such as local community leaders or elders, to share their experiences and knowledge about how their communities address extreme heat.

4. Hands-on and Collaborative Activities - Instruction: Foster collaboration among students from diverse backgrounds in planning and executing civic action projects related to extreme heat. Strategy: Allow flexibility in project options so that students can choose approaches that resonate with their cultural backgrounds or community contexts. For example, students might incorporate elements of storytelling, art, or music into their projects to convey messages about heat safety and environmental stewardship.
5. Reflection and Discussion - Instruction: Facilitate reflective discussions about how cultural perspectives influence attitudes towards environmental issues and community action. Strategy: Encourage students to share how their cultural identities and backgrounds shape their understanding of civic responsibility and their contributions to addressing environmental challenges like extreme heat.
6. Sensitivity to Community Needs - Instruction: Consider the specific needs and vulnerabilities of different cultural communities when discussing safety measures and resources during extreme heat days. Strategy: Collaborate with local organizations or leaders from culturally diverse communities to ensure that resources and information are accessible and relevant to all students and families.

Objective(s):

Students will be able to:

- Cognitive: Describe the concept of extreme heat and its impact on communities.
- Affective: Describe the importance of civic engagement in addressing community issues.
- Behavioral: Demonstrate understanding through vocabulary use and participation in explore activities.

SIOP (highlight one or more SIOP element you will include in your lesson plan to support EMLs)

	SIOP Elements	
Preparation Adapting content Linking to background Linking to past learning Strategies used	Scaffolding Modeling Guided practice Independent practice Comprehensible input	Grouping Option Whole class Small groups Partners Independent
Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral

Evidence of Mastery (Measurable):

Formative Assessments:

Students match images with short sentences. KWL chart is completed during lesson. Groups share out in small groups (poster) sharing what was learned during research activities on how schools in different countries react to extreme heat.

Summative Assessment:

Students create a Civic Action Plan (CAP) in a form of their choosing. Poster, public service announcement, podcast, video, live presentation, brochure, physical work such as clean-up of an area, planting trees, and/or installing air cooling equipment, TV and/or radio interview, attending city council and/or school board meeting, etc. Teacher will use the Civic Action Activity Rubric to grade students' work, with a grade of 3 or higher indicating mastery.

Levels of Accomplishment	Criteria	Points
Exceeds expectations	<ul style="list-style-type: none">● Creates a highly creative and original project in a unique format (e.g., podcast, video, live presentation, etc.) that effectively communicates ideas about extreme heat impacts.● Demonstrates a deep understanding of how extreme heat impacts students and presents clear, relevant information in the chosen format.● Organizes information logically and clearly in the project, effectively communicating ideas to the audience.● Uses specific examples, facts, or data effectively to support ideas about extreme heat impacts in the chosen format.● Engages the audience effectively and demonstrates a strong impact with the chosen format, encouraging awareness and action regarding extreme heat impacts.	4
Meets expectations	<ul style="list-style-type: none">● Chooses a creative format (e.g., poster, brochure) that effectively communicates ideas about extreme heat impacts.● Demonstrates a good understanding of how extreme heat impacts students and presents mostly clear and relevant information in the chosen format.	3

	<ul style="list-style-type: none"> ● Organizes information clearly in the project, communicating ideas to the audience with minor lapses in clarity. ● Uses examples, facts, or data to support ideas about extreme heat impacts in the chosen format, with some gaps in effectiveness. ● Engages the audience and demonstrates impact with the chosen format, promoting awareness of extreme heat impacts. 	
Approaches expectations	<ul style="list-style-type: none"> ● Chooses a standard format (e.g., written letter) to communicate ideas about extreme heat impacts. ● Demonstrates some understanding of how extreme heat impacts students but presents limited or unclear information in the chosen format. ● Attempts to organize information but struggles with clarity and coherence in the project. ● Attempts to use examples, facts, or data but does so inconsistently or ineffectively in the chosen format. ● Attempts to engage the audience but struggles to create impact or promote awareness effectively with the chosen format. 	2
Fails to meet expectations	<ul style="list-style-type: none"> ● Chooses an inappropriate format or fails to effectively communicate ideas about extreme heat impacts. ● Demonstrates little to no understanding of how extreme heat impacts students and fails to present clear or relevant information in the chosen format. ● Information is disorganized and unclear, making it difficult for the audience to understand the ideas presented. ● Fails to use examples, facts, or data to support ideas about extreme heat impacts in the chosen format. ● Fails to engage the audience or create 	1

	impact regarding awareness of extreme heat impacts with the chosen format.	
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Key vocabulary

- Heatwave: A prolonged period of excessively hot weather.
- Civic Engagement: Taking an active role in community affairs.
- Community: A group of people living in the same place or having a particular characteristic in common.
- Action: Steps taken to address a problem or issue.
- Extreme Heat Index: The heat index shows how hot it feels outside. It uses both the temperature in degrees Fahrenheit and how humid it is to guess how hot it feels in the shade. For instance, if it's 96°F and the humidity is 65%, the heat index says it feels like 121°F.

Materials

- Large world map or globe
- Symptoms and Treatment cut-out cards (PDF) -- download separately
- Pictures or visuals of extreme heat events (e.g., heatwaves, droughts) (PDF) -- download separately
- Individual student journals or individual KWL chart
- Heat index chart - see below
- Mapping and research (PDF) regarding locations of *extreme heat impacting learning*; providing summaries of research at below grade level, at grade level, and above grade level. -- download separately
- Vocabulary cards (heatwave, civic engagement, community, action, etc.) (PDF) -- download separately
- Markers and large paper for group activities
- Computer or tablet for research (optional)
- Civic Action Rubric -- above

Source(s):

- Royalty-free images of extreme heat: <https://www.istockphoto.com/photos/extreme-heat>
- Videos on extreme heat impacting schools in Arizona: <https://youtu.be/TueaRaLWA6g?si=p1AQwwMon926Pxl>
- <https://youtu.be/XsITHQYJeg4?si=Ky74172kl8bW-mnB>
- https://youtu.be/ErdUbxgBKCg?si=t7wPTPhauNzOW_u

Extreme heat impacts student's health and learning

- <https://www.cbsnews.com/news/schools-extreme-heat-students-dealing-with-hot-temperatures-back-to-school/>
- <https://www.edweek.org/leadership/the-school-year-is-getting-hotter-how-does-heat-affect-student-learning-and-well-being/2022/09>
- <https://ies.ed.gov/ncee/edlabs/regions/west/ask/details/70>
- <https://mathandmovement.com/back-to-school-2023-will-extreme-heat-affect-student-learning/>

- <https://www.nbcnews.com/news/us-news/hot-classrooms-are-impairing-student-learning-health-record-hot-year-t-rcna100298>

***Information on each country where schools were impacted by extreme heat in 2023**

- **Australia**

- <https://www.miragenews.com/extreme-heat-raises-safety-concerns-costs-in-1177212/>
- <https://www.kidsnews.com.au/environment/coming-in-hot-students-return-to-steaming-schools-with-no-aircon/news-story/cafe3306cb4b9024ab850055bfdba021>
- <https://www.abc.net.au/news/2024-03-03/heat-in-schools/103523536>

- **Iran**

- <https://www.rferl.org/a/iran-closures-extreme-heat/32529259.html>
- <https://apnews.com/article/iran-closes-government-offices-heat-8d2b398b56e818b446e49d7044adf8a5>
- <https://www.commondreams.org/news/iran-heat>

- **United States**

- <https://thehill.com/homenews/education/4189494-heres-where-sweeping-heat-is-closing-us-schools/>
- <https://www.cnn.com/2023/09/06/us/heat-closing-schools-climate/index.html>
- <https://www.usatoday.com/story/news/nation/2023/08/24/heat-weather-school-closing-air-conditioning/70656924007/>

- **South Sudan**

- <https://www.telegraph.co.uk/global-health/climate-and-people/sudans-heatwave-school-closures-children-lockdown-africa/#:~:text=A%20massive%20heatwave%20has%20put,fa%20above%20the%20seasonal%20average.>
- <https://www.nytimes.com/2024/03/20/world/africa/extreme-heat-south-sudan-schools-climate.html>
- <https://www.telegraph.co.uk/global-health/climate-and-people/sudans-heatwave-school-closures-children-lockdown-africa/#:~:text=A%20massive%20heatwave%20has%20put,fa%20above%20the%20seasonal%20average>
- <https://apnews.com/article/south-sudan-schools-closed-heat-wave-b52d535e3ee7284b2832c0cfd14b1167>

- **Cambodia**

- <https://www.khmertimeskh.com/501481605/schools-told-to-stop-lessons-if-temperature-exceeds-40c/>
- <https://learningenglish.voanews.com/a/extreme-heat-closes-schools-widens-learning-gap/7594202.html>
- <https://www.khmertimeskh.com/501481605/schools-told-to-stop-lessons-if-temperature-exceeds-40c/>
- <https://www.cnn.com/2024/05/09/asia/southeast-asia-heatwaves-education-school-closures-intl-hnk/index.html>

- **Philippines**

- <https://www.straitstimes.com/asia/se-asia/philippines-keeps-schools-shut-as-heat-shows-no-signs-of-abating#:~:text=the%20two%20days.,The%20Philippines%20closed%20publi>

[c%20schools%20across%20the%20country%20from%20April,and%20straining%20its%20power%20supplies.](#)

- <https://www.straitstimes.com/asia/se-asia/philippines-keeps-schools-shut-as-heat-shows-no-signs-of-abating#:~:text=the%20two%20days.,The%20Philippines%20closed%20public%20schools%20across%20the%20country%20from%20April,and%20straining%20its%20power%20supplies.>

- <https://www.nbcnews.com/news/world/schools-close-extreme-heat-philippines-bangladesh-asia-rcna149485>

- **Bangladesh**

- [https://reliefweb.int/report/bangladesh/heat-stricken-bangladesh-extends-school-closures#:~:text=DHAKA%2C%2030%20April%20%2D%20Bangladesh%5B,soared%20past%2042C%20\(108F\)](https://reliefweb.int/report/bangladesh/heat-stricken-bangladesh-extends-school-closures#:~:text=DHAKA%2C%2030%20April%20%2D%20Bangladesh%5B,soared%20past%2042C%20(108F))

Research links for extension activities:

- ADHS School :

<https://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/extreme-weather/pubs/too-hot-to-play-developing-school-heat-policies.pdf>

- Arizona Department of Health Services

<https://www.azdhs.gov/preparedness/epidemiology-disease-control/extreme-weather/heat-safety/index.php#heat-home>

<https://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/extreme-weather/heat/managing-extreme-heat-recommendations-for-schools.pdf>

- Maricopa County:

<https://www.maricopa.gov/1871/Extreme-Heat>

<https://www.maricopa.gov/1858/Heat-Surveillance>

<https://www.maricopa.gov/DocumentCenter/View/32611/Extreme-Heat-Brochure?bidId=>

- Center for Heat Resilient Communities:

<https://news.asu.edu/20240520-science-and-technology-asu-lead-partner-new-national-center-heat-resilient-communities>

<https://news.asu.edu/20231020-asu-tapped-support-arizonas-first-extreme-heat-preparedness-plan>

<https://news.asu.edu/20240422-environment-and-sustainability-arizona-adapting-heat-crisis-initiatives-featured-asu>

<https://globalfutures.asu.edu/urban-climate-research-center/>

- Playground Safety

<https://spectrumlocalnews.com/nys/central-ny/public-safety/2024/07/02/heat-safety-reminders-when-it-comes-to-playgrounds>

<https://www.nsc.org/community-safety/safety-topics/child-safety/playground-safety>

- Heat; a deadly threat

<https://www.azcentral.com/story/news/local/arizona-environment/2024/07/10/how-phoenix-is-paving-the-way-on-urban-heat-research-and-mitigation/74198321007/>

<https://aiaonline.org/files/16325/heat-acclimatization-exertional-heat-illness-management-policy.pdf><https://aiaonline.org/health/heat>

<https://youtu.be/vqBrL8BokSk?si=T2QPeYQABfOF9Ycw>

Engage

Teacher Will: (Hook).

1. **Before any discussion**, ask students what they can do outside in the winter versus what they can do outside in the summer. *Have students describe the comparison.*
2. Facilitate a discussion about the weather and how it affects daily life. Ask students if they've ever experienced extremely hot weather and what they already know about it. Teacher activates prior knowledge, and hooks student attention. Frame questions in a context your students can relate to.
3. Visuals and Discussion: Show pictures of extreme heat events around the world (e.g., people cooling off, dry landscapes). *What do you notice about these pictures? How do you think extreme heat affects people and the environment?* Discuss how these events can impact communities and daily life all over the world.
4. Organize students into partners. Pass out copies of the extreme heat images that are pre-cut so students can match the image with the words and discuss their own experiences with extreme heat. Teacher asks: *What do you notice about these pictures? How do you think extreme heat affects people and the environment? How does extreme heat impact a student's learning?*
5. **Ask students to add notes/images to their journal or personal KWL** chart in the “know” category. Be sure that images and words are available to each partner-group. KWL Chart (Know, Want to know, Learned):

(NOTE) Post these sentence stems on the board so students may feel supported in writing about their ideas:

I see _____.

I think _____.

I wonder _____.

Student Will:

1. Students respond to questions.
2. Students will participate in conversation about weather, extreme heat, and their own experiences.
3. Students review pictures of extreme heat events around the world (e.g., people cooling off, dry landscapes). *What do you notice about these pictures? How do you think extreme heat affects people and the environment?*
4. Students work together with a partner to match the pictures with the words.
5. Students write/draw in a journal in a KWL chart what they know about extreme heat in the “know” category: use the words with the images as support.

(NOTES) *ELL Students: Allow extra time for processing and encourage them to participate using simpler vocabulary. Provide sentence frames or prompts to scaffold their responses. *SPED Students: Use visuals, gestures, or prompts to facilitate participation. Break down questions into smaller parts and use concrete examples related to their experiences. *Gifted Students: Pose open-ended questions that encourage critical thinking and analysis. Allow them to lead discussions on broader implications of extreme heat events.

(NOTES) *ELL Students: Use visual cues and simplified language in the KWL chart. Allow them to draw pictures or use simple words to express what they know and want to learn. *SPED Students: Modify the chart with larger spaces, simpler language, or use of symbols/icons. Focus on comprehension and allow them to express their thoughts verbally or through assisted writing. *Gifted Students: Provide opportunities for independent research or extended learning beyond the KWL chart. Allow them to explore additional resources and present their findings in a creative format.

Explore

Teacher Will:

Inquiry Questions: *What IS extreme heat? Where in the world do extreme heat events happen?*

1. Clarifying Extreme Heat: review vocabulary terms in context.
2. Review the heat index chart on the bottom of the lesson plan.
3. Facilitate student pairs with organizing the *symptoms and treatments* into the correct categories. Share copies (pre-cut) with partner teams to organize under each label
4. Mapping Extreme Heat: Students divide into small groups based on their country of interest. Ask them to identify regions or countries where extreme heat events are common and choose one to investigate

Student Will:

1. Review common terms and concepts related to extreme heat events - orally share understanding of the key vocabulary terms.
2. Answer questions based on the heat index chart and likelihood of heat disorders with prolonged exposure - work with a partner to organize examples under two labels: symptoms and treatments.
3. Pre-cut
4. Form groups dependent upon interests. Research country to find location.

further: Bangladesh, Philippines, South Sudan, Cambodia, Australia, the United States, or Iran.

- a. Provide each group with a large world map or globe, markers, and websites to locate their country, websites:
<https://geology.com/world/world-map.shtml>
<https://www.natgeomaps.com/re-the-world-for-kids>
<https://www.ducksters.com/geography/>
 - b. Have groups mark these areas on their maps and discuss why these places might experience more extreme heat. *Is there a pattern in their locations?*
5. Research and Reporting: Assign each group a specific extreme heat event dependent upon their country chosen (e.g., a recent heatwave in a city or region).
 6. Using books or online resources (supervised and based on handout), have students research: When and where the event occurred; How it affected people and the environment; any civic actions taken by the community to address the issue.
 7. Research: Provide resources such as books, articles, videos, and websites that cater to different reading levels and abilities. Encourage students to gather information about their chosen extreme event, focusing on causes, impacts, and responses.
 8. Groups create a simple report or presentation to share their findings with the class on poster paper, *including the following*:
 - a. Introduction: Each group introduces their chosen extreme event, including where and when it occurred.
 - b. Causes: Explain what caused the extreme event. Use simple language and visuals to aid understanding.
5. Groups mark the location of all 7 countries on group's map with a marker and participate in conversation about patterns of areas around the world where heat related issues are impacting people.
 6. Groups research their assigned area of the chosen topic using credible sources. Read about the event occurring in the chosen country; discuss with group to answer the questions (when, where, why, how, who); plan poster to show what happened, who was impacted, and ideas on what could possibly be done to improve the situation; draw and write the poster; practice for presentation; present poster to class.
 7. Discuss questions with team
 - Write in KWL chart about what students want to know
 - Write in KWL chart about what has been learned

- c. Impacts: Describe how the event affected people, animals, and the environment. Use examples and personal stories to make it relatable.
- d. Responses: Discuss how communities and governments responded to the event. Highlight any rescue efforts, rebuilding, or preparation for future events.
- e. Conclusion: Summarize the key points and lessons learned from studying the extreme event.

9. **Write what was learned and what students still wonder about:** *What would you like to see changed? In that country? In our community? State? School? What have you learned about extreme heat around the world? What do people need to know? What can be done? What can we do about this issue/problem?*

(NOTES) ELL (English Language Learners)

*Visual Aids and Graphic Organizers - use maps, charts, and diagrams alongside verbal explanations. Graphic organizers like KWL charts to help organize support - simplify language and provide contextual clues. Use bilingual dictionaries or translate key vocabulary to support comprehension.

*Collaborative Learning - pair ELL students with native speakers or advanced peers. Encourage peer teaching and cooperative group activities.

*Modeling and Guided Practice - demonstrate tasks step-by-step. **SPED (Special Education) ***

Multi-Sensory Approaches - use tactile materials like maps with raised features or textured objects.

Incorporate auditory cues and verbal prompts. *Task

Breakdowns - break down complex tasks into smaller, manageable steps. Offer visual schedules or

checklists for tracking progress.*Differentiated Instruction - adjust content, process, and product

based on individual needs. Provide options for demonstrating understanding (e.g., oral

presentations, drawings). *Assistive Technology - use assistive devices like voice-to-text software or

screen readers. Explore apps or online tools for

interactive learning experiences. **Gifted Students.** *
 Complex Tasks - offer challenging tasks that encourage critical thinking and creativity. Provide opportunities for independent research and exploration. *Depth and Complexity - explore topics in greater depth beyond grade-level expectations. Encourage inquiry-based learning and open-ended questions. *Choice and Flexibility - offer choices for research topics or reporting formats. Allow flexibility in project design and presentation methods.

Explain - Formative Assessment

Teacher Will:

1. Group Presentations: Allow each group to present their findings. *Encourage discussion about the civic actions taken and their effectiveness.*
 - a. Introduction: Each group introduces their chosen extreme event, including where and when it occurred.
 - b. Causes: Explain what caused the extreme event. Use simple language and visuals to aid understanding.
 - c. Impacts: Describe how the event affected people, animals, and the environment. Use examples and personal stories to make it relatable.
 - d. Responses: Discuss how communities and governments responded to the event. Highlight any rescue efforts, rebuilding, or preparation for future events.
 - e. Conclusion: Summarize the key points and lessons learned from studying the extreme event.
2. Class Discussion: *What did you learn about extreme heat and its impact? Why is it important for communities to take action during extreme weather events? How can you contribute to your community during a heatwave?*
3. Vocabulary Review: Review key terms learned during the lesson. Encourage

Student Will:

1. Groups present what was learned during research activities.
2. Add to writing in the KWL chart, using vocabulary words. Students share what they have learned/discovered.
3. Teacher connects student discoveries to correct content terms/explanations, and students articulate/demonstrate a clear and correct understanding of the lesson objectives addressed to this point.

students to use these terms in their discussion.

Elaborate

Teacher Will:

IQ #2 – How can school children stay safe during extremely hot days?

1. Ask students: *Based on your research, how can school children stay safe during extremely hot days?* Put ideas on white board and facilitate a conversation.
2. Share videos on school regulations during high-heat days:
 - a. <https://youtu.be/TueaRaLWA6g?si=p1AQwwMon926Pxl>
 - b. <https://youtu.be/XslTHQYJeg4?si=Ky74172kl8bW-mnB>
 - c. https://youtu.be/ErdUbxgBKCg?si=t7wPTPthauNzOW_u

(NOTE) ELL Students: Provide captions or subtitles in their native language if available. Pause the video periodically to check comprehension and discuss key points in simpler language. **SPED Students:** Use visuals and simplify the content of the video. Provide visual aids or use real-life examples related to extreme heat events. **Gifted Students:** Allow them to analyze deeper aspects of the video, such as the causes of extreme heat or the global impact. Encourage them to take notes on advanced concepts.

3. Community Action Plan: Have students brainstorm and propose simple actions their class or school could take to help their school or community during a heatwave. Students now work individually or with a partner to develop a community action plan or a letter to a school leader. Students take the basic learning gained about extreme heat and clarify it with other schools around the world and apply it to their personal circumstance in order to explore a potential solution to the problem of how school children can stay safe

Student Will:

1. Participate in class discussion.
2. Watch videos.
3. Then, work individually or with a partner to develop a community action plan or a letter to a school leader. Students take the basic learning gained about extreme heat and clarify it with other schools around the world and apply it to their personal circumstance in order to explore a potential solution to the problem of losing recess during extreme heat days at school. Students should be using higher order thinking at this stage.

<p>at school during extremely hot days. Students should be using higher order thinking at this stage.</p> <ol style="list-style-type: none"> 4. Students put together CAP in a form of their choosing (<i>multiple modes encouraged</i>): poster, public service announcement, video, live presentation, brochure, physical work such as clean-up of an area and/or installing something, TV and/or radio interview, attending city council and/or school board meeting, etc. 5. Letter to Local Leaders: Encourage students to write letters to local leaders suggesting ways to prepare for extreme heat and promote safety in their community. Teachers assist students in connecting with appropriate agencies, organizations, communities, etc. <i>How can we influence policy?</i> 6. Teacher assists students in building awareness and support; use social and other media. <i>Connect with community.</i> 	
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Evaluate - Summative Assessment

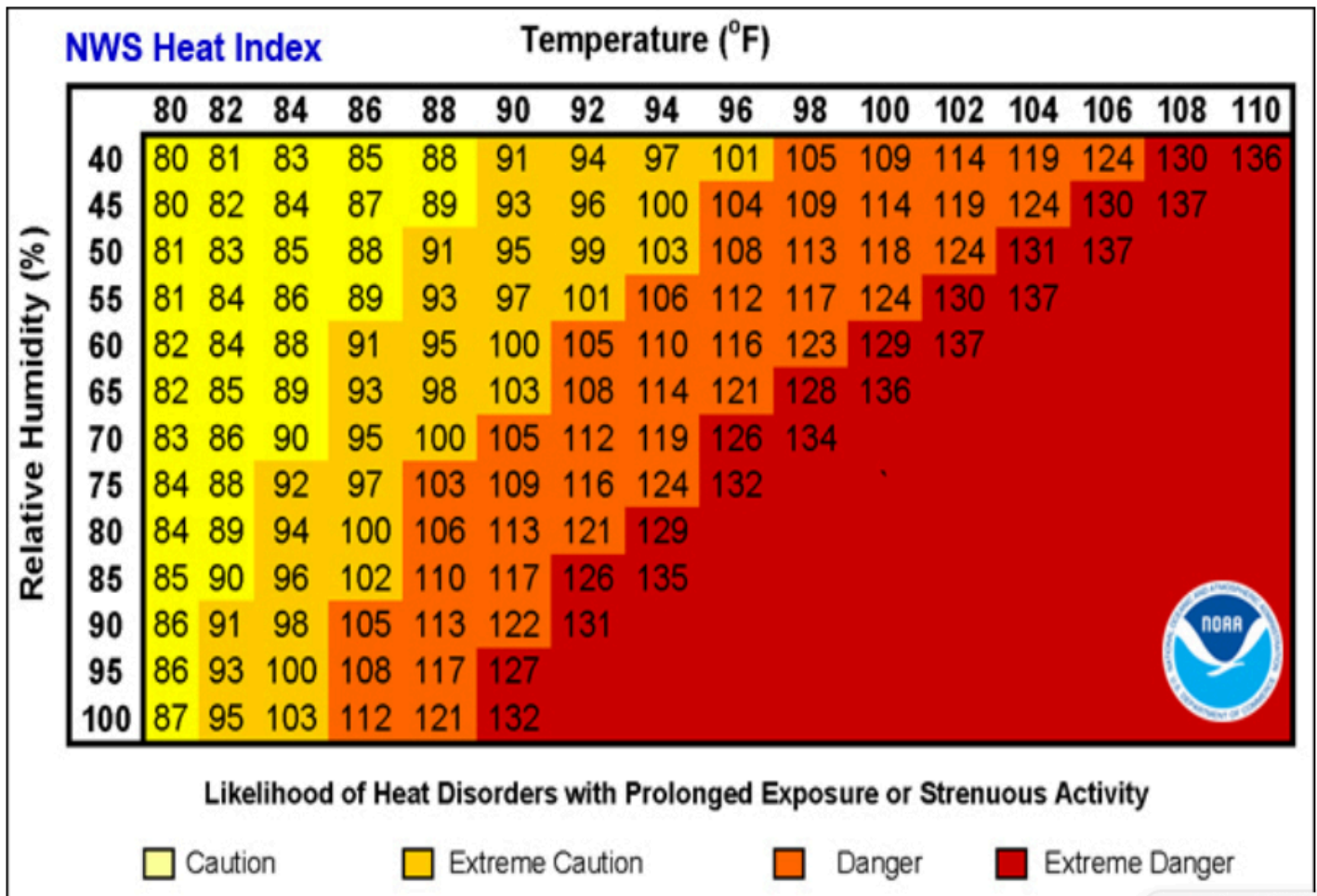
<p>Teacher Will:</p> <ol style="list-style-type: none"> 1. Students first present their CAP ‘product’ to the class. 2. Then, students will implement their CAPs in ways identified in Elaborate. 3. During presentations, teacher will assess student participation during discussions and group activities and... <ol style="list-style-type: none"> a. Evaluate the accuracy and depth of research presented by each group. b. Monitor students' use of vocabulary terms during discussions and presentations. 	<p>Student Will:</p> <ol style="list-style-type: none"> 1. Students implement CAP 2. Students communicate results 3. Students are assessed on their CAP projects using rubric
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Extensions(s):

- Develop a civic action project focused on changes that can be made to assist during extreme heat days with plants or animals.

- Develop a civic action project on developing procedures for specific population groups such as infants, the elderly, outside workers, etc.
- Debate or Panel Discussion: Organize a debate or panel discussion where students can argue different perspectives on policies related to mitigating extreme heat (e.g., urban planning, infrastructure development, public health initiatives).
- Challenge students to propose and execute a small-scale project including organizing a community event, or collaborating with local organizations to raise awareness of extreme heat exposure.
- Interviews with Experts: Arrange for students to interview local officials, activists, or scientists who work on heat-related issues. Encourage students to reflect on how civic engagement plays a role in addressing these challenges.

Heat Index



<https://www.weather.gov/ama/heatindex>