

WRITING A CLIMATE CHANGE STORY

Pre-Visit

Grade Level: Middle/High School

Length of Time: 45 minutes

Essential Questions:

- What environmental impacts are the Marshall Islands facing due to climate change?
- What environmental impacts are the delta and mangroves facing due to climate change?

Standards:

- Iowa Social Studies
 - **SS.6.17.** Analyze and explain the cultural, physical, and environmental characteristics of places and regions and how this affects the life of the people who live there.
 - **SS.7.3.** Gather relevant information from primary and secondary sources using the origin, authority, structure, and context of the sources to guide the selection.
 - **SS-Geo.9-12.16.** Analyze relationships and interactions within and between human and physical systems to explain reciprocal influences.

Materials:

- Whiteboard or computer with ability to project onto the board
- Computers or tablets. The ability to have online access. (Or library access if needed)
- Notes outline document (see below pre-visit lesson)

Introduction:

- Have the words climate change, river delta, keystone species, and mangroves on the board. Ask students to talk with a neighbor about their definitions.
- Bring the students back together and ask for volunteers to share their thoughts. Have a student write the thoughts on the board or type them depending on how the words are being shown to the class.
 - **Definitions:** (to share with the class if they are not quite hitting the correct definition)
 - **Climate change:** major changes in temperature, rainfall, snow, or wind patterns lasting for decades or longer.
 - **River delta:** landform that forms from deposition of sediment carried by a river as the flow leaves its mouth and enters slower-moving or standing water. For example, with the Mississippi River, fresh water enters and mixes with the salt water of the Gulf of Mexico creating a brackish or semi-salty habitat.



- **Keystone species:** organism whose presence or absence dramatically changes the ecosystem.
- **Mangroves:** hearty trees and shrubs that thrive at the intersection between freshwater and saltwater.
- Using a map, ask for a volunteer to point out where they think the Republic of the Marshall Islands is located. (show location if students do not know)

Activities:

- Students will research information for the fictional story they will write.
 - Provide students with the Student Research Notes document as a guiding document while they research
 - Research prompts can include: Marshall Islands, river deltas, keystone species and mangroves.
- Once research is completed, students will write an outline of a fictional story for elementary school aged children.

Wrap-Up:

Tell students they will visit the National Mississippi River Museum & Aquarium (NMRMA) where they will be able to take more notes about the topics listed on the document while visiting the Rivers to the Sea exhibit. Then, they will be able to continue their story in an upcoming class period.

Lesson Plan Development funded by the Resource Enhancement and Protection Conservation Education Program (REAP CEP)



NATIONAL MISSISSIPPI RIVER MUSEUM & AQUARIUM

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Student Research Notes

1. Marshall Islands

- o General Notes:

- o Environmental Impacts:

- o Marshallese plan for the future:

2. Delta (Stingray touch tank)

- o General Notes:

- o Ask the educator in the delta about stingrays and climate change:



3. Mangroves

- o General Notes:

- o Restoration:

- o Upside Down Jellyfish:

- o Nutrient Reduction:

4. Positive steps humans can take to help with conservation and sustainability that impact the above topic areas.

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Post-Visit

Grade Level: Middle/High School

Length of Time: 45 minutes

Essential Questions:

- What environmental impacts are the Marshall Islands facing due to climate change?
- What environmental impacts are the delta and mangroves facing due to climate change?
- What positive steps can humans take to help with conservation and sustainability?

Standards:

- Next Generation Science Standards
 - **MS-ESS3-5 Earth and Human Activity.** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
 - **HS-ESS3-6 Earth and Human Activity.** Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
- Iowa Social Studies
 - **SS.6.17.** Analyze and explain the cultural, physical, and environmental characteristics of places and regions and how this affects the life of the people who live there.
 - **SS.7.3.** Gather relevant information from primary and secondary sources using the origin, authority, structure, and context of the sources to guide the selection.
 - **SS-Geo.9-12.16.** Analyze relationships and interactions within and between human and physical systems to explain reciprocal influences.

Materials:

- Students' notes page
- Computer access or the ability to visit the library



Introduction:

- Review the words climate change, river delta, keystone species, and mangroves.
- Ask for volunteers to share some of their notes from the visit to the NMRMA.
 - What was interesting? What surprised you? What do you have more questions about?

Activities:

- Students will continue writing their fictional story.
 - They will be partnered with an elementary student during an upcoming meeting.
 - The middle/high school student will read the story.
 - The elementary student will draw pictures to go along with the story.
 - The story must include information from all topic areas on the notes document.
 - Students will turn in both their story and notes to the teacher.

Wrap-Up:

Have a discussion with the students after the stories are complete, including the visit with elementary students. What did they learn? What will they take away from this activity? What would they like to learn more about pertaining to these topics?

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