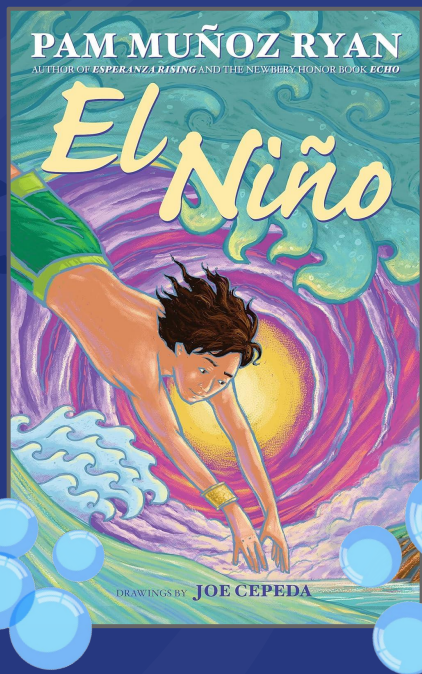




El Niño

Written by: Pam Muñoz Ryan

Illustrations by: Joe Cepeda

Activity: Exploring Ocean Currents With Different Water Temperatures

Developed by Caity Brower, Julian Morales and Mya Garcia for the CU Boulder's Children's Book Festival 2025, Open Education Resource, Creative Commons. Available at colorado.edu/event/bookfest

Grade and Colorado Academic Standard

<u>Grade Level</u>	Middle School
<u>Content Area</u>	Earth and Space Science
<u>Grade Level Expectation</u>	Complex interactions determine local weather patterns and influence climate, including the role of the ocean
<u>Evidence Outcome</u>	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates
Colorado Academic Standard information retrieved from https://www.cde.state.co.us/apps/standards . View the full standards at https://www.cde.state.co.us/standardsandinstruction/standards	



Activity Overview

Activity adapted from Nanogirl. Available via https://www.youtube.com/watch?v=fKGqmnR6_pY

OCEAN CURRENTS SCIENCE EXPERIMENT (Whole Class Activity)

Within the book *El Niño*, we observe the weather phenomenon that is El Niño, which occurs in the background of Kai's journey through grief. The weather phenomenon occurs when the ocean's surface is warmed and experiences above-average sea temperatures.

This warming can lead to the disruption of ocean currents amongst other disruptions to the ocean ecosystem as we observed in the book. Today we will be further expanding on our knowledge of ocean currents by learning about the global ocean conveyor – the long moving loop of ocean currents which transports water, nutrients, plants and animals all around the world. This conveyor consists of a mixture of warm, shallow currents at the surface, with colder, deeper currents underneath. Through our experiment, we will observe how these currents are moved by heat by using hot water, cold water, ice, and some shells to imitate the real-world currents and islands.



Materials

- Large, shallow tray (see-through or a light color)
 - Examples: baking dish, shallow bowl, or deep plate
- Cold water (dyed blue)
- Hot water (dyed red)
- Ice
- “Islands”
 - These are any objects that can act as “islands” in the water
 - Examples: rocks, shells, plastic blocks, etc.



Directions

1. Introduce with a discussion about the title of the book, “El Niño”
 - Is anyone familiar with this weather pattern?
 - Does anyone know how oceanic currents work? (This is what we’ll learn in the activity!)
2. To start the activity, pour the blue (cold) water into the tray. Add a bit of ice to it to make it even colder.
 - This acts as the water around the north and south poles, which are the coldest parts of the ocean.
3. Add the islands into the “ocean” (water).





Directions – Continued

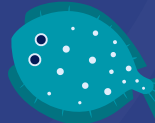


4. Slowly pour some of the red (hot) water into the dish from one side. Watch how the red water spirals and curls – this is a representation of ocean currents!

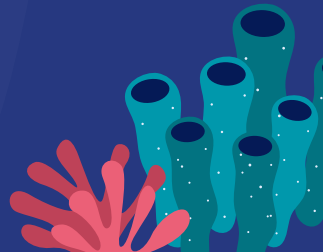
- Note how the water currents change (or are different) depending on how close they are to the “islands” as well.



Additional Suggestions



- If amount of materials and/or time permits, you can change it to a small group or even an individual activity!
- Wrapping up the activity:
 - Discuss how ocean currents work:
 - Hot water from the equator moves the cold water near the poles. The spirals and swirls we saw in the activity are similar to how this occurs in the ocean.



Opportunities for Writing!

- Connect back to the book! How did ocean currents play a role in the book? How does it connect back to the title, *El Niño*? Have the students write a reflection about the activity and make connections back to the book.
- Students can write narrative stories including some of the characters in *El Niño* going through scenarios in which they are affected by the ocean currents.
 - Ask guiding questions: Why is the ocean behaving the way it is in your story? What does an El Niño look like in real life?

We also hope you can join us on
Saturday, November 8 at the
Boulder Public Library to meet
Pam Muñoz Ryan to hear more
about *El Niño* in-person... along
with other authors and
illustrators!

For more information, visit
[https://www.colorado.edu/event/
bookfest](https://www.colorado.edu/event/bookfest)

The CU Boulder School of Education and Boulder Bookstore present the
2025 Children's Book Festival

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Join us on Saturday, November 8, 2025 | 10 a.m. - 4 p.m.

 **Boulder Public Library (Main Branch)** - 1001 Arapahoe Ave.
Free parking available

This **free event** includes author talks, a panel for educators, book sales and signing, children's activities and more. Come for part of the event, or stay for the day!

Free educational resources available on our website. Continuing Education Units (CEUs) available for teachers and librarians.

The CU Children's Book Festival is supported by a grant from the CU Office for Public and Community Engaged Scholarship (PACES)



See the schedule & register:
colorado.edu/event/bookfest

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