Ripple Effect

September 17, 2019
Agenda

1. **Context**
2. **Example unit**
3. **Goals & Questions**
Mission

We educate and empower the next generation of water-literate leaders.

Vision

We envision a future where all citizens have the knowledge and creativity they need to strengthen their communities and live with water in an era of climate change and sea level rise.
Curriculum

- Trains teachers
- Challenges students
- Empowers communities

- Teachers & education experts
- Scientists & climate change experts
- Community members in climate-vulnerable places
- Storytellers and media producers

R
Guiding Principles

Make learning visible
For teachers, by teachers
Science needs stories
Context

• Unequal access to high-quality education
• Urgent environmental issues
• New science standards are rigorous and challenging shift
2012: 4th Grade Water Workshop
Southeast Louisiana, where the Mississippi River meets the Gulf of Mexico, as it is often depicted on maps.

What maps would look like if they showed only solid land. The light blue indicates swamps, marshes, and wetlands.

THE CONTROL OF NATURE

LOUISIANA’S DISAPPEARING COAST

The state loses a football field’s worth of land every hour and a half. Now engineers are in a race to prevent it from sinking into oblivion.

By Elizabeth Kolbert  March 20, 2019
Governor declares emergency in New Orleans as pump system is compromised

Resettling the First American 'Climate Refugees'

A $48 million grant for Isle de Jean Charles, La., is the first allocation of federal tax dollars to move an entire community struggling with the effects of climate change.

By Coral Davenport and Campbell Robertson

May 2, 2006

Opinion

Miami Battles Rising Seas

In 2017, voters agreed to finance adaptation efforts through property taxes. Now the first phase of those projects is underway.

New York City’s Sandy Rebuilding Program Was Plagued From the Start, Study Says

More than half of the roughly 20,000 people who registered for assistance left the Build It Back program

Whitewashed: The Lack of Diversity in Environmental Studies
Why hasn’t anyone told us this before?
- Kaliyah, 4th grade

KIPP Central City Primary, New Orleans
- there are nearly 100,000 public schools in the United States

- in the past 5 years, 40 states have either adopted the standards or adopted a modified version of the new standards

- the new standards represent a sea-change in how science is taught at all levels of K-12 education

from National Science Teachers Association
https://ngss.nsta.org/about.aspx
“Instead of telling students what the established scientific models are, the goal is for students to develop (with support) these ideas for themselves through exploration of evidence and vetting of ideas, just as scientists do.

_Introduction to Disciplinary Core Ideas: What They Are and Why They are Important_  
National Science Teachers Association, 2017
## EARTH’S SYSTEM

### Performance Expectation
Plan and conduct investigations on the effects of water, ice, wind, and vegetation on the relative rate of weathering and erosion.

### Clarification Statement
Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.

### Science & Engineering Practices
1. Asking questions and defining problems
2. Developing and using models
3. Planning and carrying out investigations: Planning and carrying out investigations to answer questions (science) or test solutions (engineering) to problems in 3-5 builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations and designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information.

### Disciplinary Core Ideas

#### EARTH MATERIALS AND SYSTEMS
Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (UE.ESS2A.a)

#### BIOGEOLOGY
Living things affect the physical characteristics of their environment. (UE.ESS2E.a)

### Crosscutting Concepts

#### CAUSE AND EFFECT
Cause and effect relationships are routinely identified, tested, and used to explain change.

Source: Insert source here
Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
Environmental Education Continuum

Developed by the United States Environmental Protection Agency (empowerment arrow added)
My favorite part of Ripple Effect was creating things to help other people, because they might help me one day.

AZAREYAH, 4TH GRADE RIPPLE EFFECT STUDENT
Teachers as agents of change
Teachers as agents of change
In Fall 2017, the Ripple Effect curriculum design team started focusing on the community of Isle de Jean Charles, the nation's first climate change refugees.
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Goals

Pioneer a national, equity-based vision for water literacy education.

Connect more teachers, students and families to water literacy through innovative curriculum and teaching tools.
Questions

• How can the stories of lived experiences be meaningful yet also maintain scientific, dispassionate objectivity?

• How do we introduce students to issues of climate change, without distraction from climate science’s continuous evolution, external social pressures, or politicization?

• How do we instill stewardship without placing an amount of responsibility on young people?