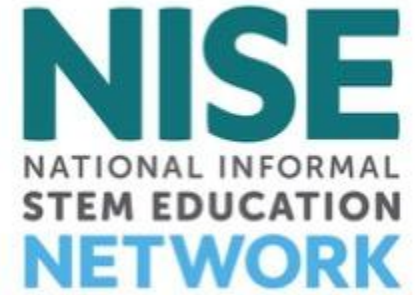


# NISE Net Online Workshop

Communicating Climate Change to Diverse Audiences

April 5, 2022



## Today's Presenters:

**Frank Kusiak**, Lawrence Hall of Science

**Christopher White**, Terry Lee Wells Nevada Discovery Museum

**Amber McCammon**, The Virgin Islands Children's Museum

**Lauren Butcher**, Explora Science Center and Children's Museum

**Rebekah Domayer**, Iowa Children's Museum



## Welcome!

As we wait to get started with today's discussion, please:

**Introduce yourself!** Type your name, institution, and location into the [Chat Box](#)

**Questions?** Feel free to type your questions into the [Chat Box](#) at any time throughout the webinar or use the raise your hand function in the participants list and we'll unmute your microphone.

**Today's discussion will be recorded and shared on nisenet.org at: [nisenet.org/events/online-workshop](https://nisenet.org/events/online-workshop)**

# Future Online Workshops

**Tuesday, May 3, 2022**

Earth & Space Resource Roundup - an Overview of All the NISE Network has to Offer

**Tuesday, June 15, 2022**

Reconnect and Re-engage with the NISE Network

**Learn more at [nisenet.org/events](https://nisenet.org/events)**



# Communicating Climate Change: Resources

## NISE Net's Climate Change Resource page: Climate Change

<https://www.nisenet.org/climatechange>



*A compilation of climate change public engagement and professional learning resources for informal science educators.*

### Climate Change

Online digital libraries of educational materials

- CLEAN collection of climate literacy and energy education materials: <https://cleanet.org>
- NOAA Climate.gov: <https://climate.gov/teaching>
- MADE CLEAR: <https://madeclear.thinkport.org>

# Communicating Climate Change: Resources

- **NASA's Climate Change Science Page** - <https://climate.nasa.gov/>
- **NOAA The Essential Principles of Climate Literacy and CLEAN's Guide to Teaching About Climate Change** - <https://www.climate.gov/teaching/climate>
- **New Hand to Hand: Children's Museums and Climate Change:**  
<https://childrensmuseums.org/2022/03/17/new-hand-to-hand-childrens-museums-and-climate-change/>
- **Design & Discovery Forum on Climate Science, Children, and the Media:**  
[https://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=304714&org=EHR](https://www.nsf.gov/news/news_summ.jsp?cntn_id=304714&org=EHR)



# Communicating Climate Change: Resources

- **National Network for Ocean and Climate Change Interpretation (NNOCCI):**  
<https://climateinterpreter.org>
  - **NNOCCI resources:** <https://climateinterpreter.org/resources>
    - NNOCCI and Frameworks Institute reframing cards for creating effective climate communication
    - NNOCCI swamp graphic showing effective messaging language: productive (green), proceed with caution (yellow), and unproductive/avoid (red)
    - Recommend NNOCCI's Crash Course for Communicating Climate Change  
<https://climateinterpreter.org/training> (Latest Crash Course registration closes on April 11)

# COMMUNICATING CLIMATE CHANGE TO DIVERSE AUDIENCES



# THE TERRY LEE WELLS NEVADA DISCOVERY MUSEUM

Located in Downtown Reno, NV

We are an all-ages hands-on science center

In our 10 years we have had over 1.2 million visitors







# What is Fire Season?!?

And how do we teach it without scaring  
the crap out of our visitors?



## Why is this topic important to us?

- Poor air quality
- Record land loss
- Straining of community resources
- Project: Camp at The Discovery
- Our role within our community



# Why is this important to us?



According to collected COVES data  
The top three reported reasons for coming are:)

- To spend time together as a group/family (41%)
- For fun/entertainment of the group (34%)
- For an educational experience for group members (18%)



How have we approached such a serious topic?

Games...obviously



Group based firefighting game



Shape based puzzle game

# TRUST YOUR FLOOR STAFF! (TEAM BASED INQUIRY)

Who sees your visitors the most?

Who interacts with your visitors the most?

Where do most of the actual good ideas come from?

Who is going to test these ideas out for you?





# Working with community experts and shareholders

---

## Contributing community partners

- University of Nevada, Reno
  - Spencer Eusden
  - Cienna Ajir
- Bureau of Land Management
  - Jennifer Diamond
- City of Reno Fire Dept
- US Park Service



Waterfall Fire 2004

**Thank  
You!**





Amber M. McCammon  
VICM Programs Director & Curator



# Communicating Climate Change to Diverse Audiences in the VI

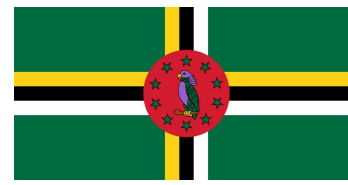
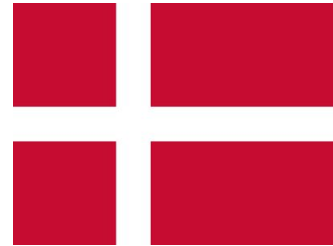


- Diverse cultures
- Indigenous peoples
- Multiple languages
- Different grade levels/ ages/ abilities



## VI Children by Race/Ethnicity, 1990-2015

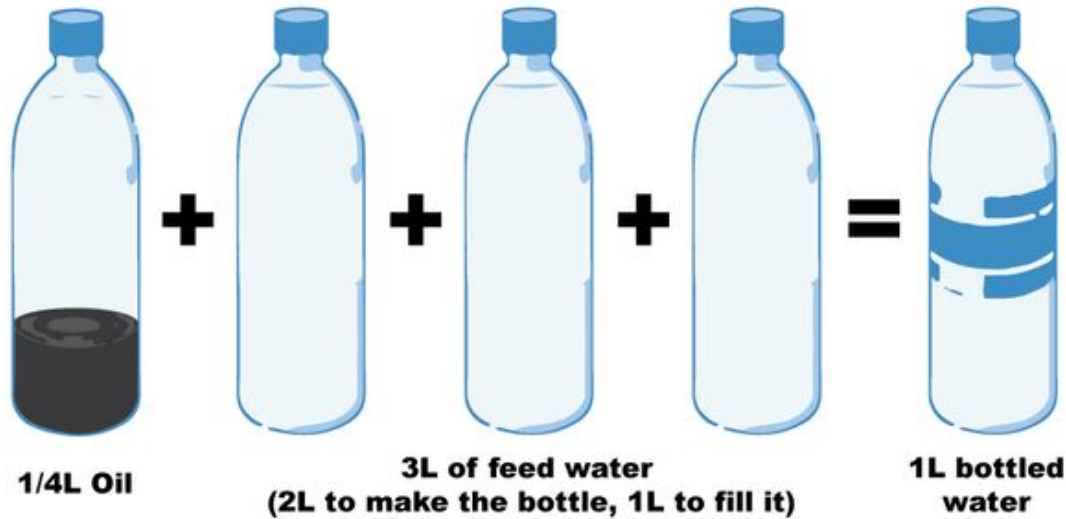
Many Nationalities:



*\*Note: Population measures VI children age birth through 19 years old.  
"Other races" may include the following: Hispanic, Asian, Middle Eastern, East Indian, or a mix of any races.*

- 75% of children spoke only English in their home.
- Of those children who spoke another language in their home, Spanish made up the majority (65% of children for whom another language was spoken), while French/Patois/Creole followed (28%), and "other languages" combined to make up a small percentage (7%).

# Infographic Signage



- Water is a valuable resource
- Issues
- Solutions
- Call to Action
  - Refill your bottle!



## HYDRATION STATION

DO YOU KNOW WHAT'S IN YOUR BOTTLED WATER?

Hazardous Chemicals

3L of Feed Water (2L to make the bottle, 1L to fill it)

1/4 of Oil

One-million plastic bottles every minute with 90% of all plastics ending up in the ocean after just a single use.

### REASONS TO SWITCH TO REUSABLE WATER BOTTLE

- **The carbon footprint** to produce bottled water is unfathomable.
- **99.9999%** bacteria-free.
- **BPA** often found in disposable water bottles. It can disrupt hormonal function in humans and impact brain development in fetuses and young children.

ISLAND DESIGNS  
VIRGIN ISLANDS  
VICC  
VIRGIN COASTS  
VICS  
VIRGIN ISLANDS CONSERVATION SOCIETY

**Refuse, Reduce, Reuse... Recycling is the last resort!**



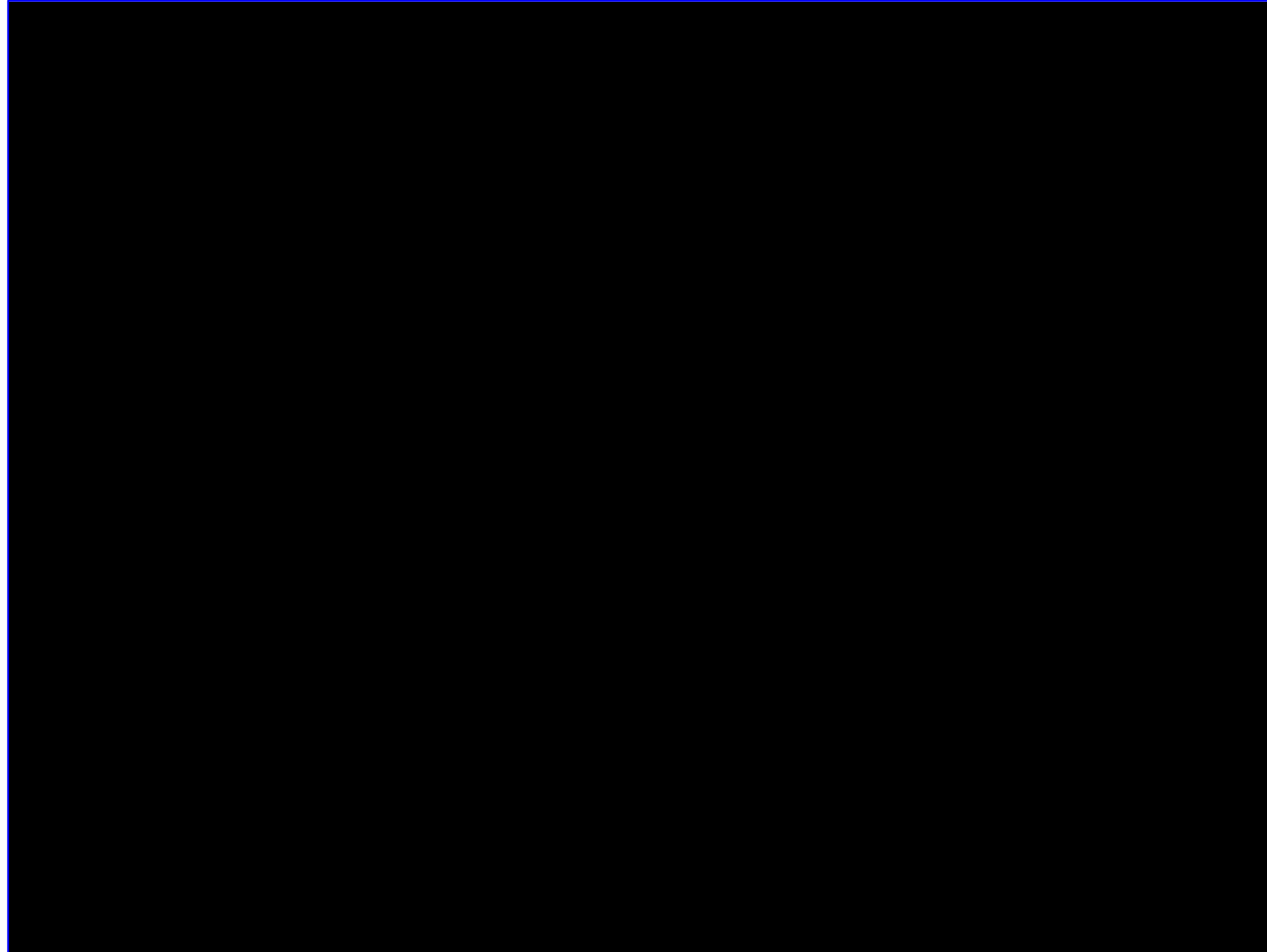
# Lead by Example

## Recycling and 3D Printing Room

- All visitors can watch recycling and new product production in action
- Currently limited signage with more infographics coming soon



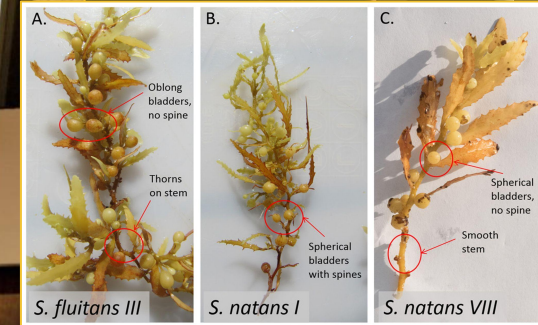
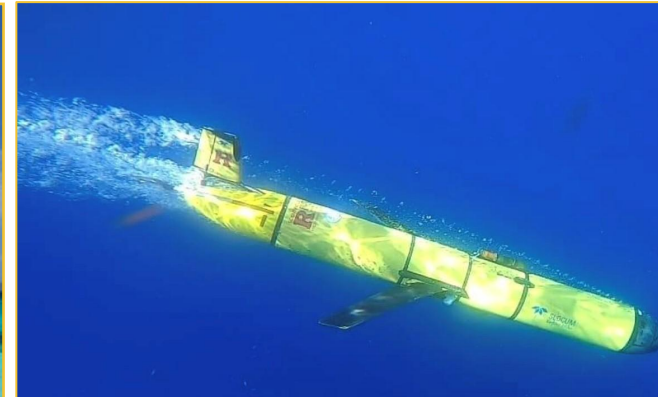
# Audiovisual Touch Screen Kiosk Curated by Grade Range



Coastal Ocean Observing Learning Station - COOLS



# Audiovisual, Multilingual Closed Captioning & ASL Transcription



## COOLS Feature ~ Sargassum Stories Infographic Signage

- Biophysical impacts
- Socioeconomic impacts

- Glider
- Interactive Videomicroscope



THANK YOU!

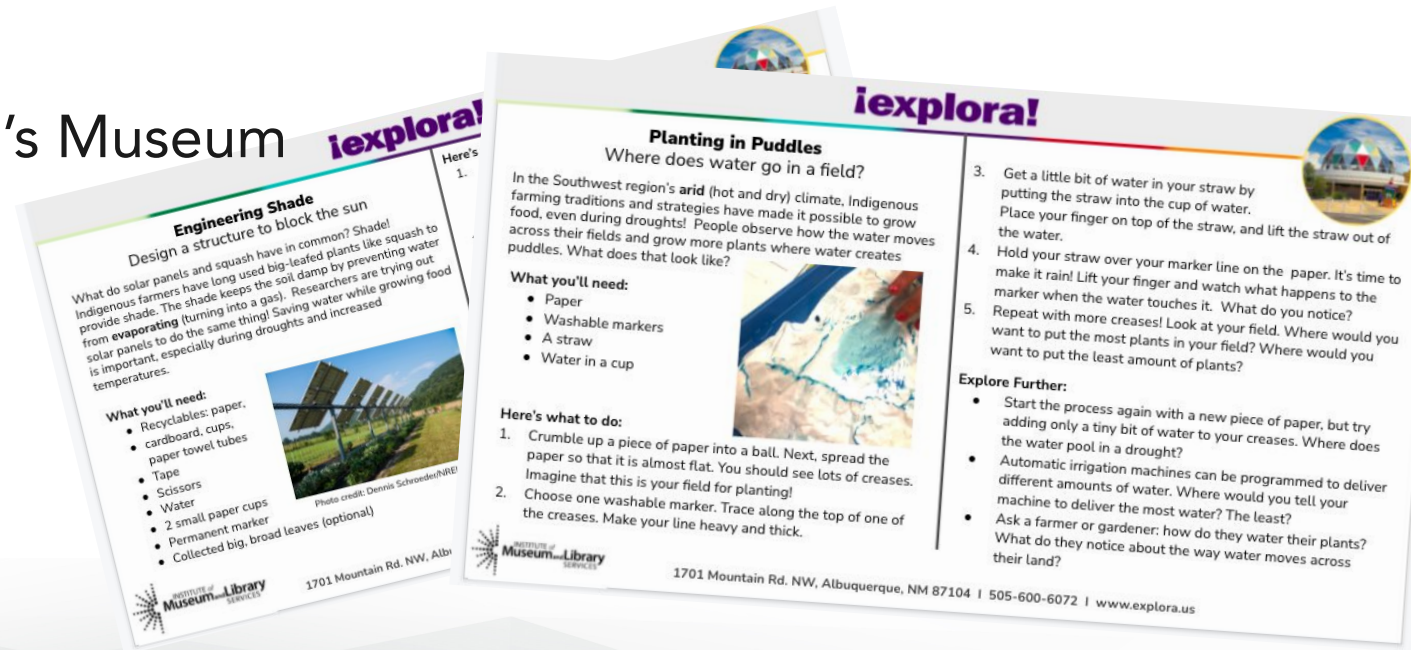
Amber M. McCammon  
VICM Programs Director & Curator  
amber@vichildrensmuseum.org  
<https://www.vichildrensmuseum.org/>





# Climate Change STEM Activity Cards

Lauren Butcher  
Explora Science Center and Children's Museum







## Climate Change STEM Activity Cards

- Small cards with at-home STEM activities for caregivers and children
- Communicate how Traditional Ecological Knowledge and practices address the effects of climate change



## Waffle Garden Design

How can you grow food with less water?

Indigenous farming traditions and strategies have made it possible to grow food in the Southwest region's **arid** (hot and dry) climate for a very long time, even during droughts! Navajo, Zuni, Zia, and Laguna peoples **conserve** (save) water by using a “waffle” garden. How does this method work?

### What you'll need:

- Some ground to dig in
- Gravel or mulch or sand
- Water



Photo credit: Library of Congress

### Here's what to do:

1. Remove plants, twigs, and rocks from an area about the size of your hands side-by-side with your fingers spread wide.
2. Use your finger to draw a square in the cleared area. Dig down about 3 to 4 inches inside the square.
3. Use the soil you remove to make walls along the edges. Add a little water to make the soil stick together.

4. Put some gravel, mulch, or sand in the bottom of your square. Repeat to make a grid.
5. Carefully pour water into the inside of your walls. What do you notice? Where does the water go? How much can you add?
6. Check underneath your gravel, mulch, or sand a little later. Is it still wet? What about the next day?

### Explore Further:

- Experiment with the height of the walls and depth of the square. What happens to the water inside?
- Try different **soil compositions** (proportion of sand, clay, and humus). What builds the sturdiest walls?
- Explore different amounts of gravel, mulch, or sand. Does the water stay in the ground longer with deeper layers?
- Ask a farmer or gardener: How do they conserve water and keep moisture in the soil?
- Do you have a drought in the area where you live? What are ways you can conserve water?

**Read:** Visit the library and check out *It's Our Garden: From Seeds to Harvest in a School Garden* by George Ancona

# iexplora!

Origins: Working with and for Native communities in NM





# iexplora!



Foundation:  
Traditional Ecological Knowledge from the past and for the future



Zuni, New Mexico. Photo credit: [ashiwi.org](http://ashiwi.org)

# iexplora!



## Process:

- Interviewed experts in Traditional Ecological knowledge and practices
- Highlighted science and engineering practices
- Referred to the past and the present
- Where relevant, included complementary STEM research



# iexplora!



## Example: Three Sisters and Solar Panels



Three  
Sisters.  
Photo credit:  
[https://sciences.ucf.edu/  
news/farming-with-traditi  
onal-compa  
nion-plantin  
g/](https://sciences.ucf.edu/news/farming-with-traditional-companion-planting/)





## Engineering Shade

### Design a structure to block the sun

What do solar panels and squash have in common? Shade! Indigenous farmers have long used big-leafed plants like squash to provide shade. The shade keeps the soil damp by preventing water from **evaporating** (turning into a gas). Researchers are trying out solar panels to do the same thing! Saving water while growing food is important, especially during droughts and increased temperatures.

#### What you'll need:

- Recyclables: paper, cardboard, cups, paper towel tubes
- Tape
- Scissors
- Water
- 2 small paper cups
- Permanent marker
- Collected big, broad leaves (optional)



Photo credit: Dennis Schroeder/NREL

#### Here's what to do:

1. Flip this card over. Have a look at the squash plant, solar panels, and any big, broad leaves you might find. How does they block sunlight? What makes them strong? What else do you notice?
2. Use your recyclables, tape, and scissors to design a structure to block the sun. Are you inspired by the leaf, the solar panel, or a combination of both?
3. Time to test it out! Take your paper cups and fill them up with the same amount of water. Use the marker to mark how high the water is.
4. Find a sunny spot for your testing. Place one cup of water underneath your shade structure. Put the other cup of water nearby.
5. Check your cups over the course of a couple days. Use your marker to draw a line where the water is in both cups. What do you notice? Was your design successful?

#### Explore Further:

- Improve your design! Does your structure provide shade all day, or just during a part of it?
- Ask a farmer or gardener: do they grow plants to shade others? What other plants are grown together and why?





## Squash Plant



## Solar Panels

Photo credit: Dennis Schroeder/NREL





# iexplora!



## Future Plans:

- Developing activity kits for outreach programs
- Incorporating into professional development for teachers, youth development specialists, and librarians
- Translating into local languages



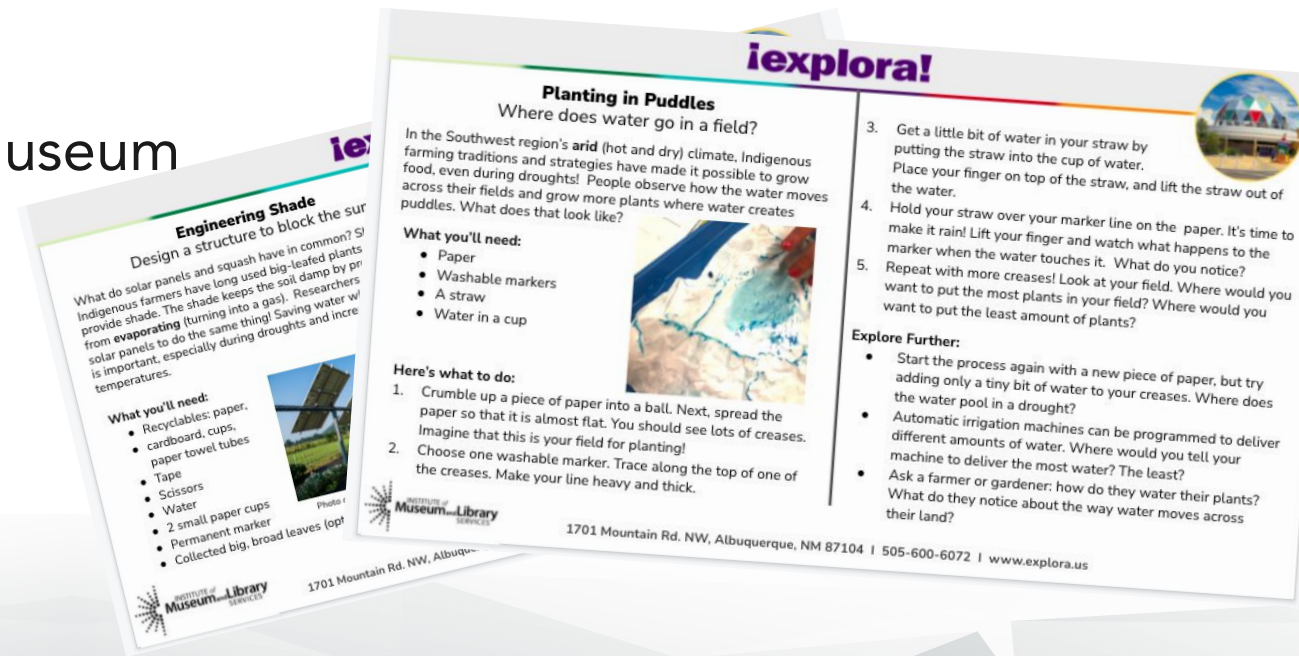


# Climate Change STEM Activity Cards

Lauren Butcher

[lbutcher@explora.us](mailto:lbutcher@explora.us)

Explora Science Center and Children's Museum



**Above and Below Iowa Water:  
Climate Change Curriculum Unit**



**NISE**  
NATIONAL INFORMAL  
**STEM EDUCATION**  
**NETWORK**

THE IOWA  
**CHILDREN'S**  
**MUSEUM**  
imagine • create • discover • explore





# **Our Plan**

**Expand our curriculum unit to include four activities that support the learning goal of local climate change in Iowa. These activities are as follows:**

- In the first activity, students will learn about rivers around the state and what lives in a river by reading "Over and Under a Pond." Students will be expected to create a river scene that demonstrates and depicts what lives above and below a river.**
- In the second activity, students will experience firsthand that climate change can have a direct impact on the environment but we can make solutions for that. Students will experiment with the use of plants to help eliminate erosion from occurring on shore lines of bodies of water during intense rain events.**
- In the third activity, students will learn about how people use electricity, analyze electrical use and how we generate electricity by reading "My Papi Has a Motorcycle." Students will be expected to discuss electrical use and demonstrate their learning with the associated cards.**
- In the fourth activity, students will learn how to communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. Students will be expected to create their own public service announcement about climate change (a poster, a video, a skit, etc).**

# ICM ACTIVITY #1

**Theme: Above and Below Iowa Water  
(Engineering 101)**

**What You Need:**

- Water scene template
- Markers
- Glue sticks
- Scissors
- Printed animals/plants



**What You Learn:**

Students will learn about what animals and plants live above and below water and that it is important to take care of our water.

**What You Do:**

1. Set up materials in a buffet-style set up.
2. Read the book "Over and Under the Pond" by Kate Messner to the students.
3. Students will use the water scene templates and add both animal and plant life above and below the water.
4. During this time, prompt the students to think about the relationships of the plants and animals. What if there was a factory or housing complex built right next to their water? How would that effect what lives near and under the water?
5. Climate change is due to human interaction with the environment. Climate change can be used as an umbrella term that covers a lot of things, but we are focusing solely on the effects of civic development near natural waterways which can lead to kill events by simply disrupting the environment with introducing pollution (noise and chemical) and other kinds of non-native wildlife.
6. Have students share their work with the rest of the group if time allows.







# ICM ACTIVITY #2

Theme: Land Cover (Engineering 101)

## What You Need:

- Paint trays
- Hair nets
- Rocks
- Plastic greenery
- Water pitchers
- Blue water color



## What You Learn:

Students will learn about erosion and how to prevent it by using land cover.

## What You Do:

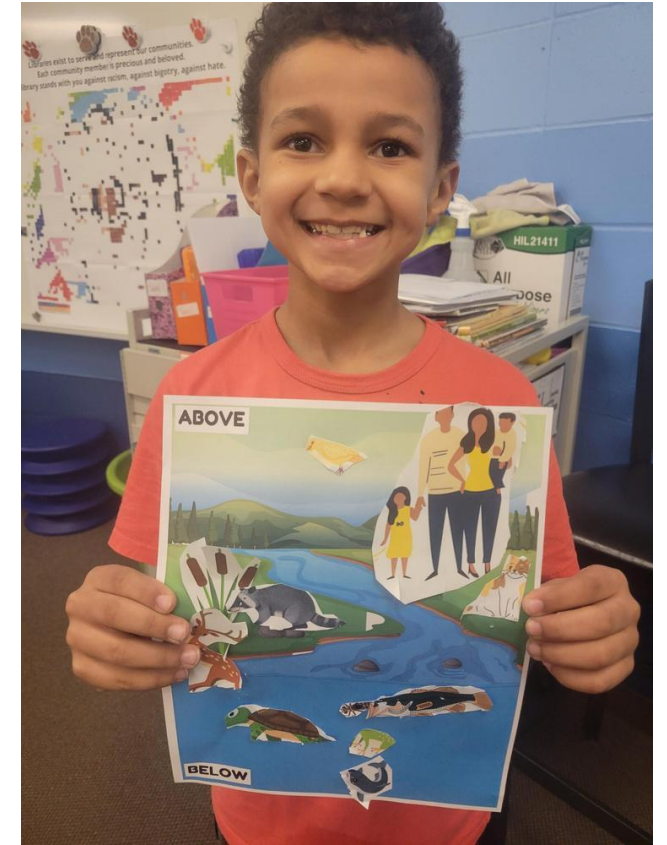
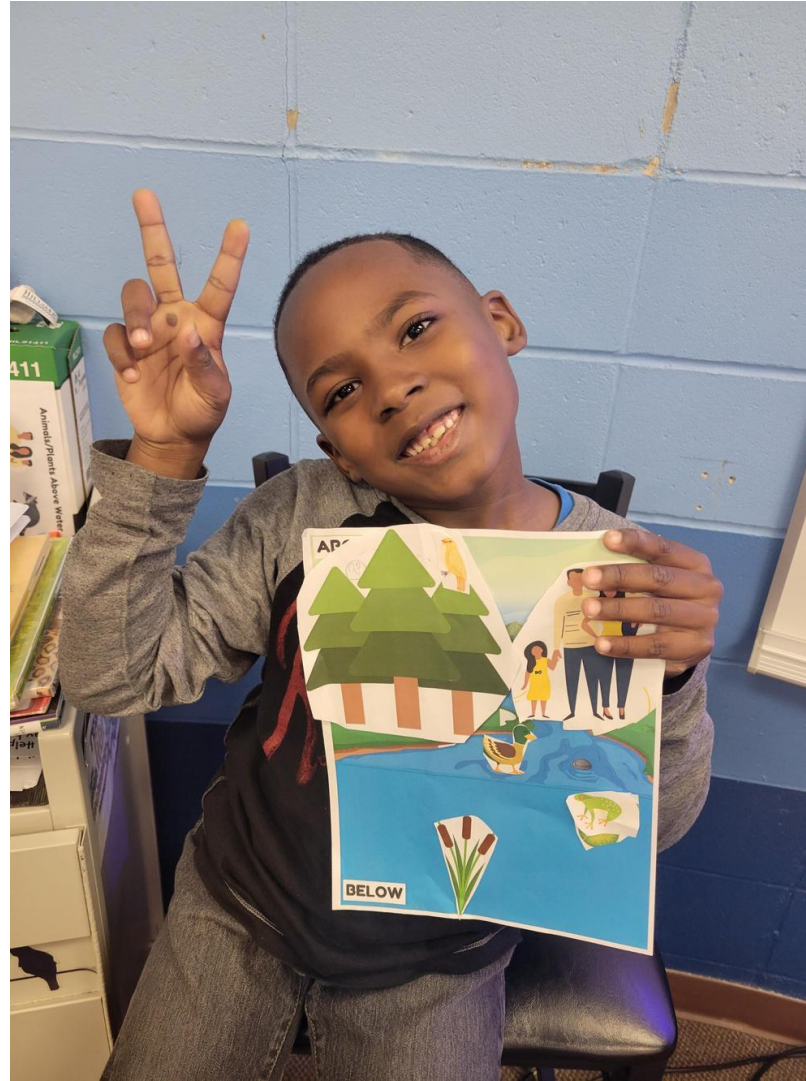
1. Set up materials in a buffet-style set up.
2. There are only two full set ups available so students will need to work in two large groups to perform this experiment.
3. In the one of wells of the paint trays, place 3 scoops of rocks in the shallow end.
4. In the other well of the paint tray, place down a hair net in the shallow end and place 3 scoops of rocks in the hair net. Place one plastic greenery sheet on top of the rocks in the hair net.
5. Fill a water pitcher with water and a few drops of blue water color.
6. Proceed to pour water over the shallow ends and observe what happens.
7. Where does the water go? What keeps the rocks in place?
8. What else could you do to prevent erosion? Allow time for discussion as to why it's important to prevent erosion from occurring.



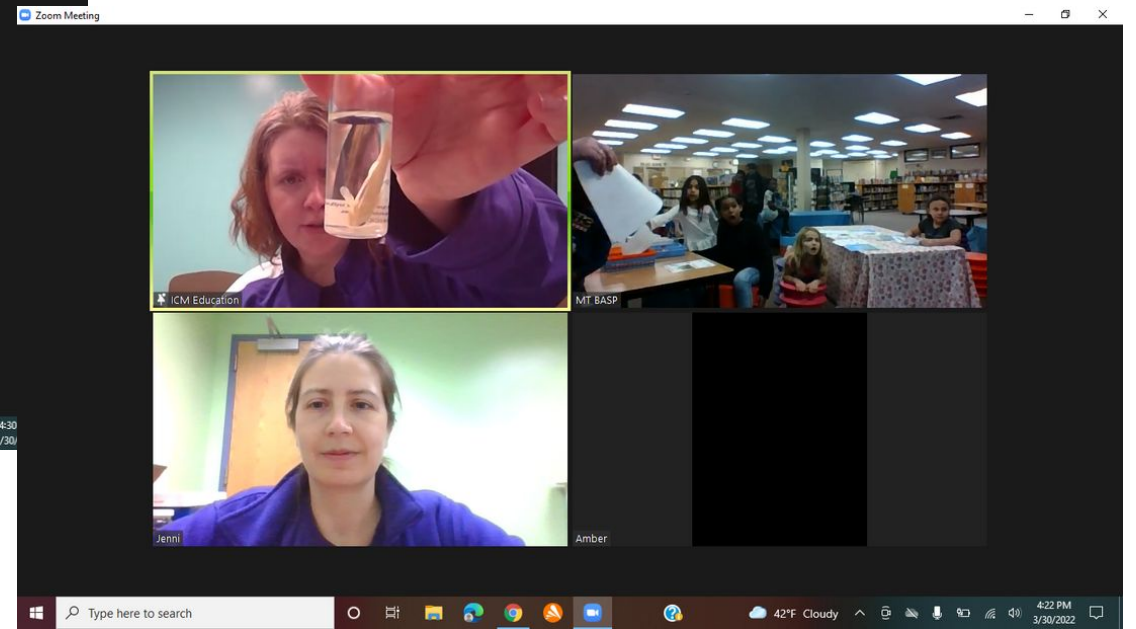
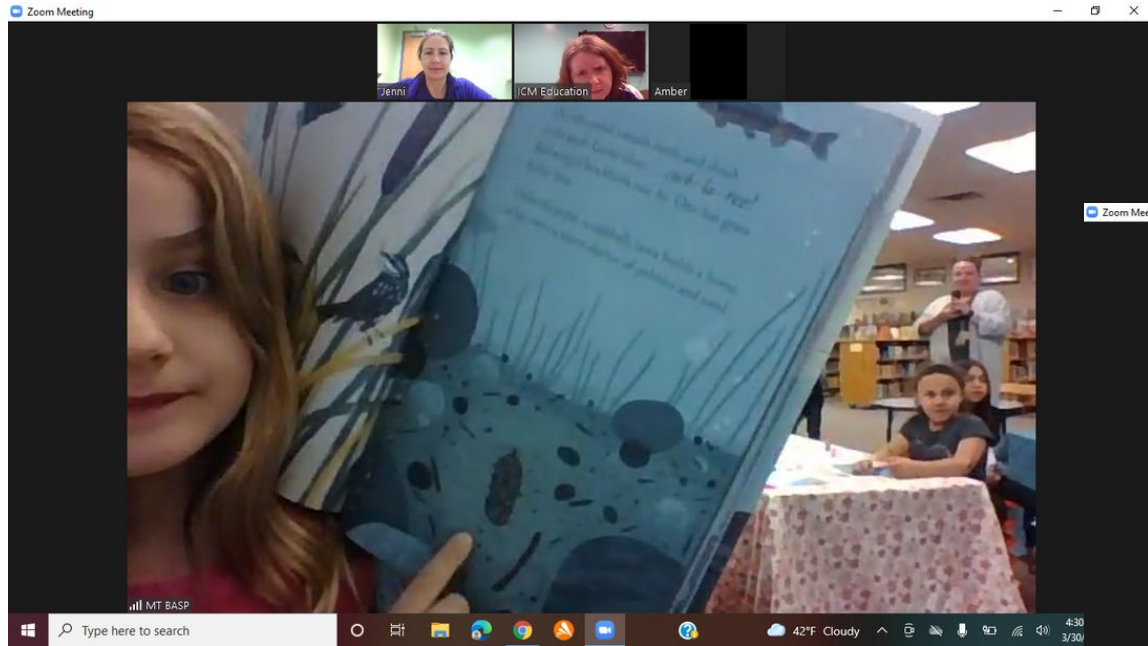








# We are still in the middle of the project but what we have learned so far....





# Together, we can make a turtle-y big change!



Rebekah Domayer,  
Education Program Manager  
at the  
Iowa Children's Museum

[rdomayer@theicm.org](mailto:rdomayer@theicm.org)  
319-625-6255 ext 213



# Q & A

## Themes from registration questions...

- Kids and climate science
- Dealing with deniers
- Concise main messaging
- Incorporating Native voices
- Avoiding “doom and gloom”

# Get Involved

Learn more and access the  
NISE Network's online digital resources  
[nisenet.org](https://nisenet.org)



**Subscribe to the  
monthly newsletter**  
[nisenet.org/newsletter](https://nisenet.org/newsletter)

**Follow NISE Net on social networking**  
[nisenet.org/social](https://nisenet.org/social)



# Future Online Workshops

**Tuesday, May 3, 2022**

Earth & Space Resource Roundup - an Overview of All the NISE Network has to Offer

**Tuesday, June 15, 2022**

Reconnect and Re-engage with the NISE Network

**Learn more at [nisenet.org/events](https://nisenet.org/events)**





# Thank You

