Launching a Co-produced Creative Climate Change Curriculum and Drawdown Solutions for Elementary Students

CLEAN meeting 11-10-20

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Plan for the presentation/conversation

- How this project came to be!
- The Co-produced Creative Climate Change Curriculum (5C)
- The Drawdown accessible adaptations
- Conversation about launching educational resources
  - Formal vs. informal?
  - Experience with past projects?

Youth Performance can inspire a community with hope for climate solutions

Start by watching the 2-minute trailer!

I promise, it will really help the rest of this make sense.

http://www.insidethegreenhouse.org/shine/index.html

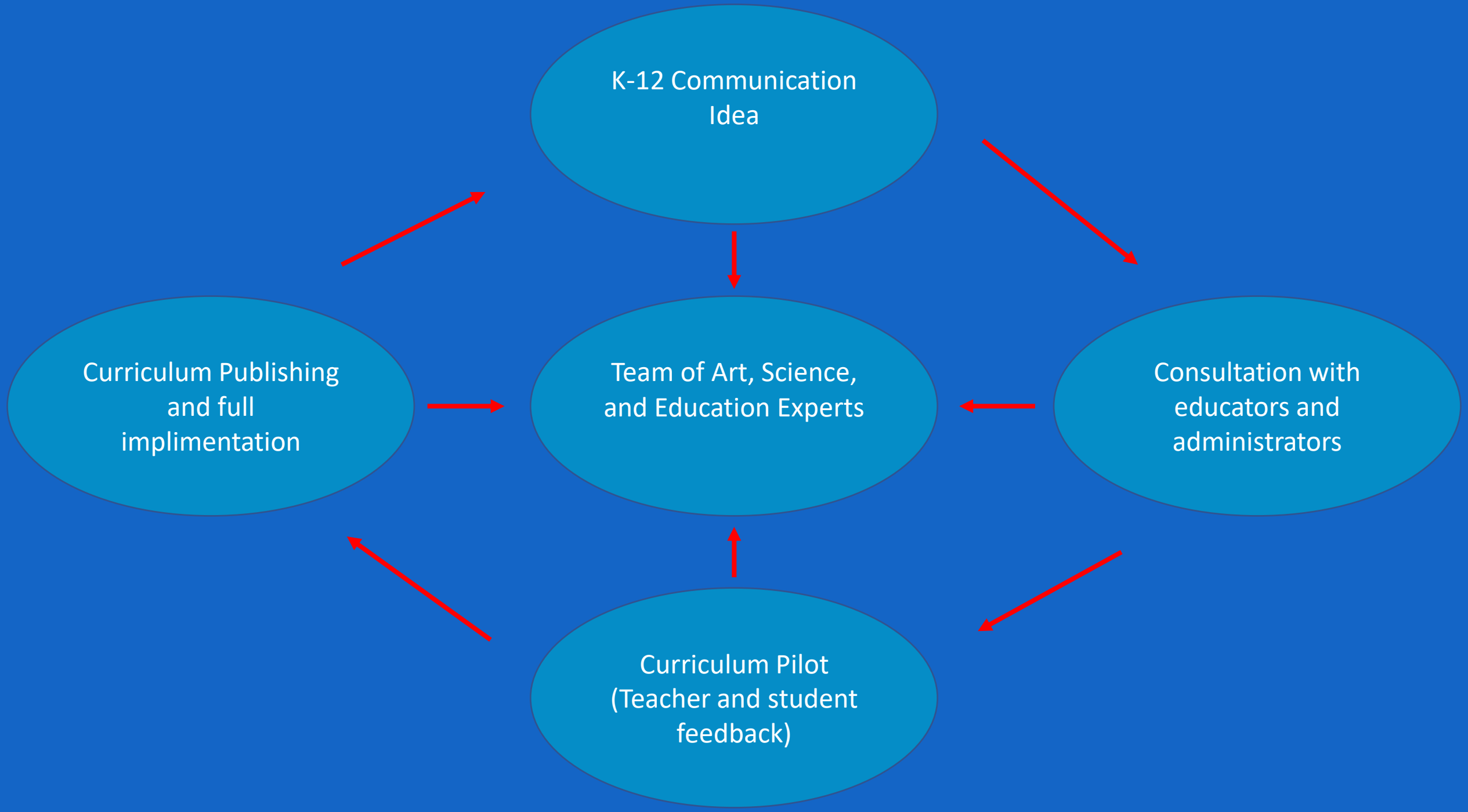
The Story: Act 1

Left Hand
Butter Boulder

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH
BOULDER

Act 2:
Youth-Authored Skits of Local Solutions

https://www.colorado.edu/cumuseum/programs/schools-and-groups/fossils-classroom/materials-and-resources


K-12 Communication Idea
Curriculum Publishing and full implimentation
Team of Art, Science, and Education Experts
Consultation with educators and administrators
Curriculum Pilot (Teacher and student feedback)

Art/Science Partnership Co-Design Framework for the Creation of the Shine Curriculum

1. Stakeholder Engagement:

- Teachers, administrators, and students in Jefferson County
- CU Natural History Museum
- Inside the Greenhouse/ENVS (CU)

2. Expert Engagement

- Nationally Renowned Scientists
- Education Experts
- Artists and Musicians

3. Intentional Impact

- Community Engagement
- Youth as Authors of Knowledge and Initiators of Action
- Actions for Resilience

4. Reflection (Iterative and durational)

But Also:

a. Have appropriate funding (So far: CU Office of Outreach and Engagement, ENVS, CU Natural History Museum)

b. Be realistic about time needed (lots! 4 years total for this project)

c. Respect the integrity of both the arts and sciences

Shine Curriculum Learning Goals:

Through lessons and activities in this curriculum students will:

- Understand the relationship between energy and climate
- Place the earth's production of fossil fuels and the impact of human-use of fossil fuels into scale within the last 300,000,000 years of geological history
- Understand how our energy-use is impacting climate
- Engage in effective climate communication
- Understand that the arts can be used to communicate science

Participatory Performance Learning Goals:

- Embodied learning (See Abrahamson, 2004 for more on embodied learning benefits)
- Nuanced understanding of themes through physical participation in dramatic metaphors
- Youth empowerment
- Civic engagement
- Collaboration with others to effectively communicate youth-authored solutions to an audience
- Students take roles as authors of knowledge and partners in communication to the public

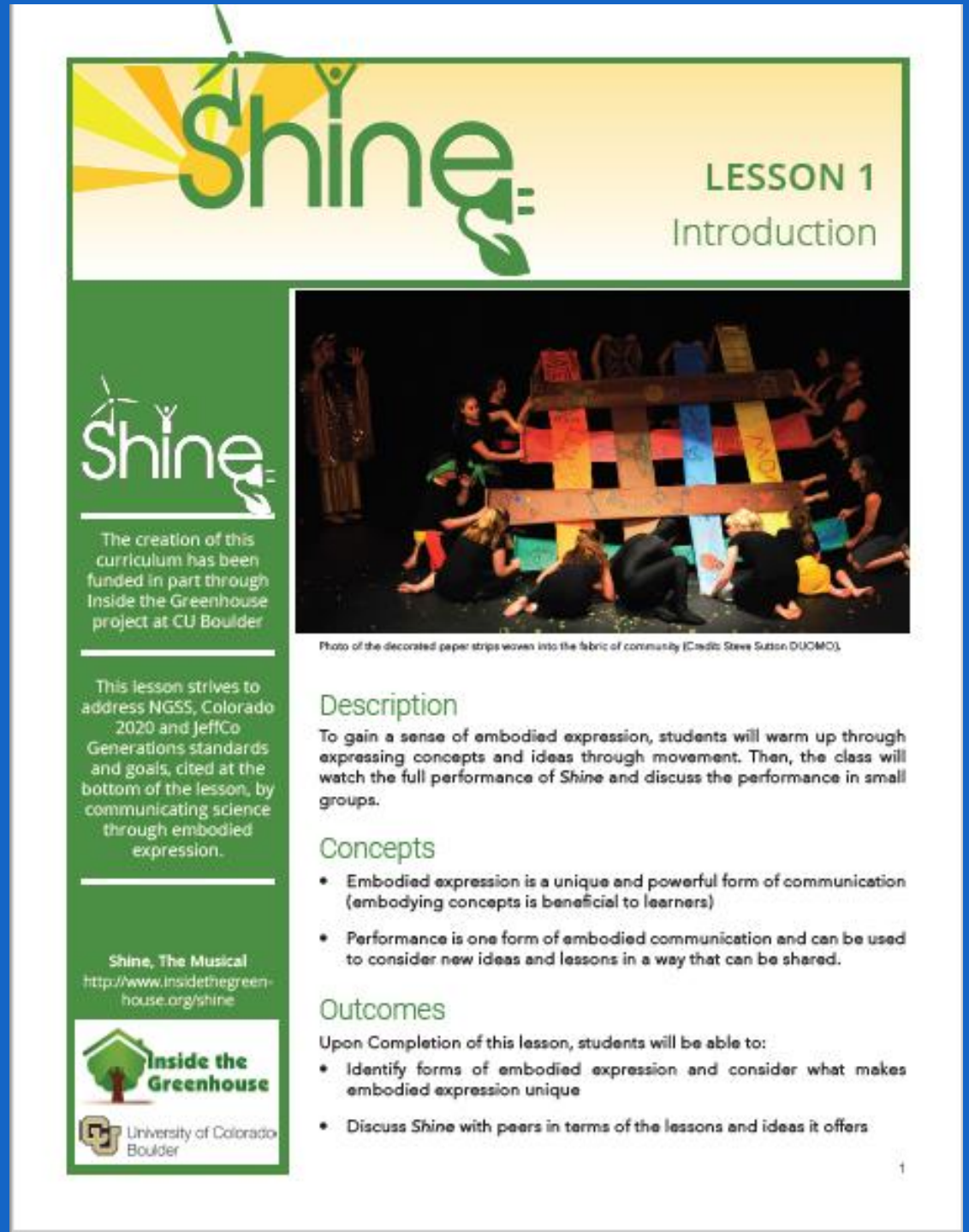
1st Curriculum Pilot:

4th/5th grade

4 teachers

Stober Elementary

Spring 2019



Shine

LESSON 1
Introduction

Shine

The creation of this curriculum has been funded in part through Inside the Greenhouse project at CU Boulder

This lesson strives to address NGSS, Colorado 2020 and JeffCo Generations standards and goals, cited at the bottom of the lesson, by communicating science through embodied expression.

Shine, The Musical
http://www.insidethegreenhouse.org/shine

Inside the Greenhouse
University of Colorado Boulder

Photo of the decorated paper strips woven into the fabric of community (Credit: Steve Sutton DUOMO).

Description

To gain a sense of embodied expression, students will warm up through expressing concepts and ideas through movement. Then, the class will watch the full performance of *Shine* and discuss the performance in small groups.

Concepts

- Embodied expression is a unique and powerful form of communication (embodying concepts is beneficial to learners)
- Performance is one form of embodied communication and can be used to consider new ideas and lessons in a way that can be shared.

Outcomes

Upon Completion of this lesson, students will be able to:

- Identify forms of embodied expression and consider what makes embodied expression unique
- Discuss *Shine* with peers in terms of the lessons and ideas it offers

1

Photo Credit: Lianna Nixon

Culminating Event, Earthday 2019

Celebrating, sharing, and sustaining what's been created (engagement!)

http://www.insidethegreenhouse.org/shine/

Co-created 12 Lesson Set!

shine_lesson1 (1).pdf

shine_lesson2.pdf

shine_lesson3.pdf

shine_lesson4.pdf

shine_lesson5.pdf

shine_lesson6.pdf

shine_lesson7.pdf

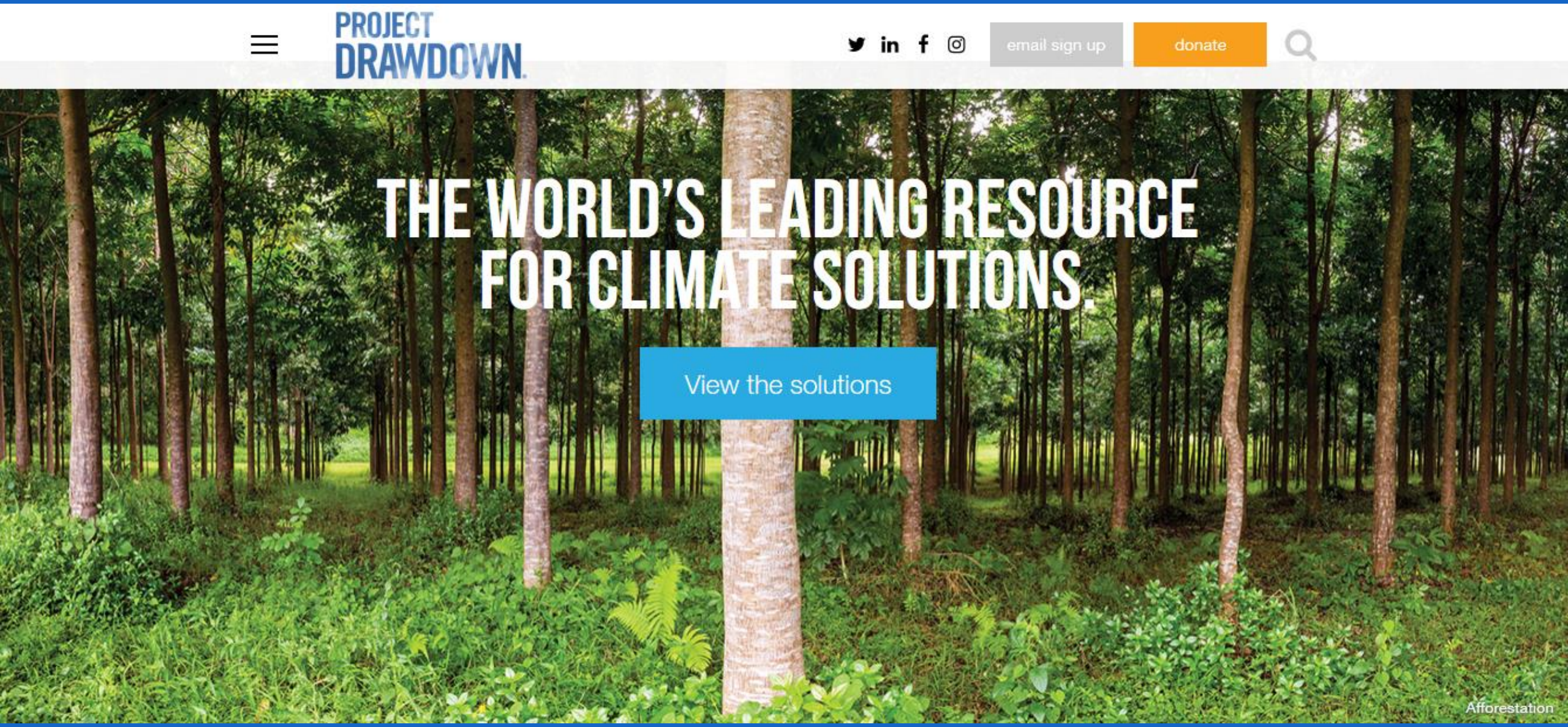
shine_lesson8.pdf

shine_lesson9.pdf

shine_lesson10.pdf

shine_lesson11.pdf

shine_lesson12.pdf



Providing context for students: https://www.drawdown.org/

Drawdown Adaptation Process

- Began as an effort in our Creative Climate Communication Class
- Piloted initial solutions at University Hill Elementary- a bilingual school in Boulder
- Continued the project with the class
- Moved into summer with Beth, Patrick, 2 Graduate, and 2 undergraduate interns
- Complete this winter (piloting in progress)
- Let’s take a look!

Photo by Raz Bradley on Unsplash

ABANDONED FARMLAND RESTORATION

12.5–20.3
GIGATONS
CO_2 EQUIVALENT REDUCED / SEQUESTERED (2020–2050)

Sometimes, farmers are not able to use their land to grow food anymore. The land they leave behind can still be used for many things.

Around the world, farmers are moving away from land that they once used to raise animals or grow food. There are many reasons for this. Sometimes, farming and grazing damage land and make it unusable. Sometimes weather and **climate** change and it is not possible for farmers to grow crops due to drought or flooding. Farmers sometimes stop using land if they don't have access to markets to sell what they raise. They also leave land if they need to migrate (move away from their land). In many cases, it is cheaper for farmers to just leave their land and start another farm somewhere else.

There are around 1 billion acres of abandoned farmland around the world. Forests have not been allowed to grow on this land and it has not been developed for homes and businesses. We could make abandoned land farmable again. When we do, we can make more food, help farmers and ecosystems, and reduce the amount of **carbon dioxide** in our air.

Growing more food: *Restoring old farmland takes money and work. It is important because we can use the land to grow more food.*

KEY WORDS

abandoned
Abandoned farmland is land that was used for farming but that is not currently being used for farming.

ecosystem
An ecosystem is a community of living organisms (such as plants, animals, and bacteria) along with the nonliving parts of their environments (such as air, water, sunlight, and soil).

Photo Credits
Growing more food: wang kenan on Unsplash
Farms sequester carbon: Axel Fassio / CIFOR
Measuring soil health: 2016 CIAT / GeorginaSmith

Why is it important to restore old farmland?

Our world population is growing. More people require more food. We can restore old farmland. That means we use abandoned farmland for farming once again.
By restoring abandoned farmland we can:

- feed more people
- protect forests from being destroyed to make new farmland
- sequester (hide) more carbon dioxide in the roots, stems and leaves of plants to reduce **greenhouse gases** in the air

Farms seqester carbon: *This farm is planting a lot of different crops. This will help sequester more carbon in the soil over time.*

When old farmland is left alone, sometimes the soil erodes. When soil erodes and plants die, they release greenhouse gases, like carbon dioxide, into the air. If the land is restored for farming, the plants can once again hold greenhouse gases. They do this by sequestering (hiding) carbon in plant roots.

KEY WORD

erosion
Erosion is when wind, water, or extreme weather slowly break apart land and rocks and move them away from their location.

What does farmland restoration look like?

Measuring soil health: *This girl is recording tests on the soil of the farm. This will help make sure the soil is healthy and sequestering carbon.*

Restoration can mean many things. It might look like:

- Introducting plants that are native to that area
- Creating tree plantations
- Using 'regenerative,' or very environmentally friendly, farming techniques

It is important for local governments to start programs that help farmers and landowners pay for regeneration and restoration. Otherwise, many farmers and landowners won't be able to pay to restore their land.

SOLUTION REVIEW
Regenerative Farming

When abandoned farmlands are restored, they should become sustainable sites. Regenerative farming is a good sustainable alternative. It focuses on farming many different plants and animals, rather than just one plant, like corn, or one animal, like cows. Having many different plants and animals on the farm means the land can act as a carbon sink and will produce healthy fruits, veggies, and animal products like meat and dairy.

What we'd like to ask:

- What are effective methods to launch a curriculum?
- What are effective ways to launch an education tool?
- Formal vs. Informal education outreach processes- what have others had success with?
- Conferences? Energy vs. return
- Targeted outreach