

The Environmental Commons: Citizen Science with Urban Youth

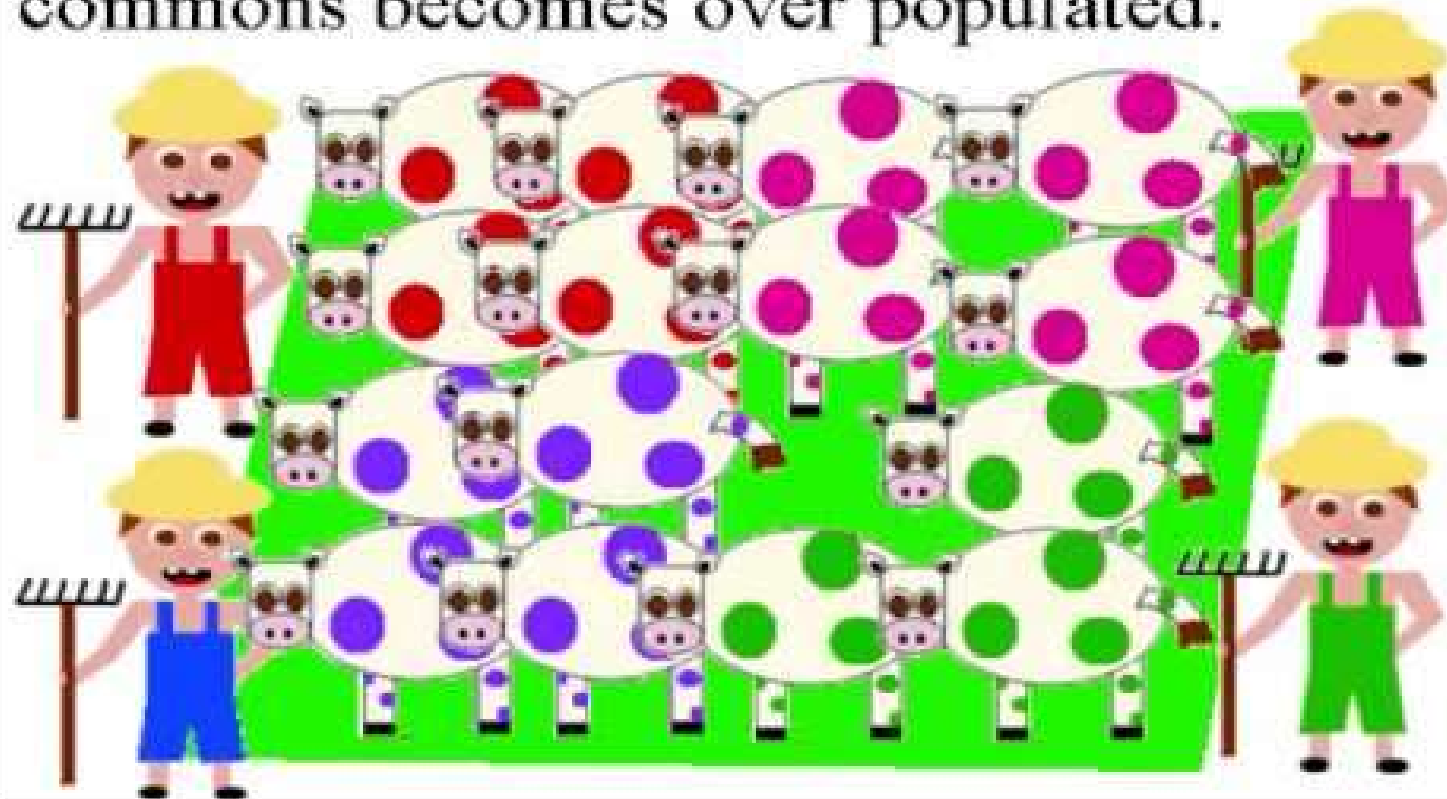
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THE ENVIRONMENTAL COMMONS

TRAGEDY OF THE COMMONS

They continue to add cows until the commons becomes over populated.



CHALLENGING THE TRAGEDY

“There is no reason to believe that bureaucrats and politicians, no matter how well meaning, are better at solving problems than the people on the spot, who have the strongest incentive to get the solution right.”

— Elinor Ostrom



PRESERVING THE COMMONS

1

Proximity to and
knowledge about
the local context

2

Identification
with the group
and its task

3

Mutual respect,
responsibility and collective
interaction to build trust



ENVIRONMENTAL COMMONS



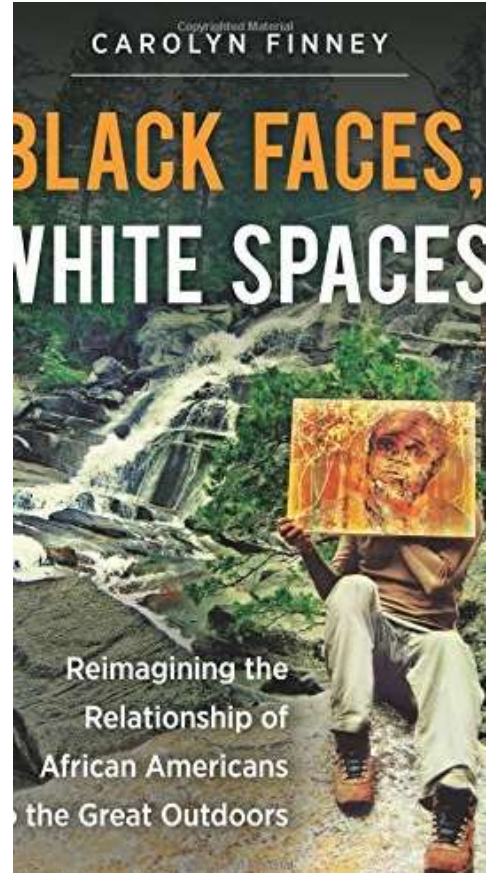
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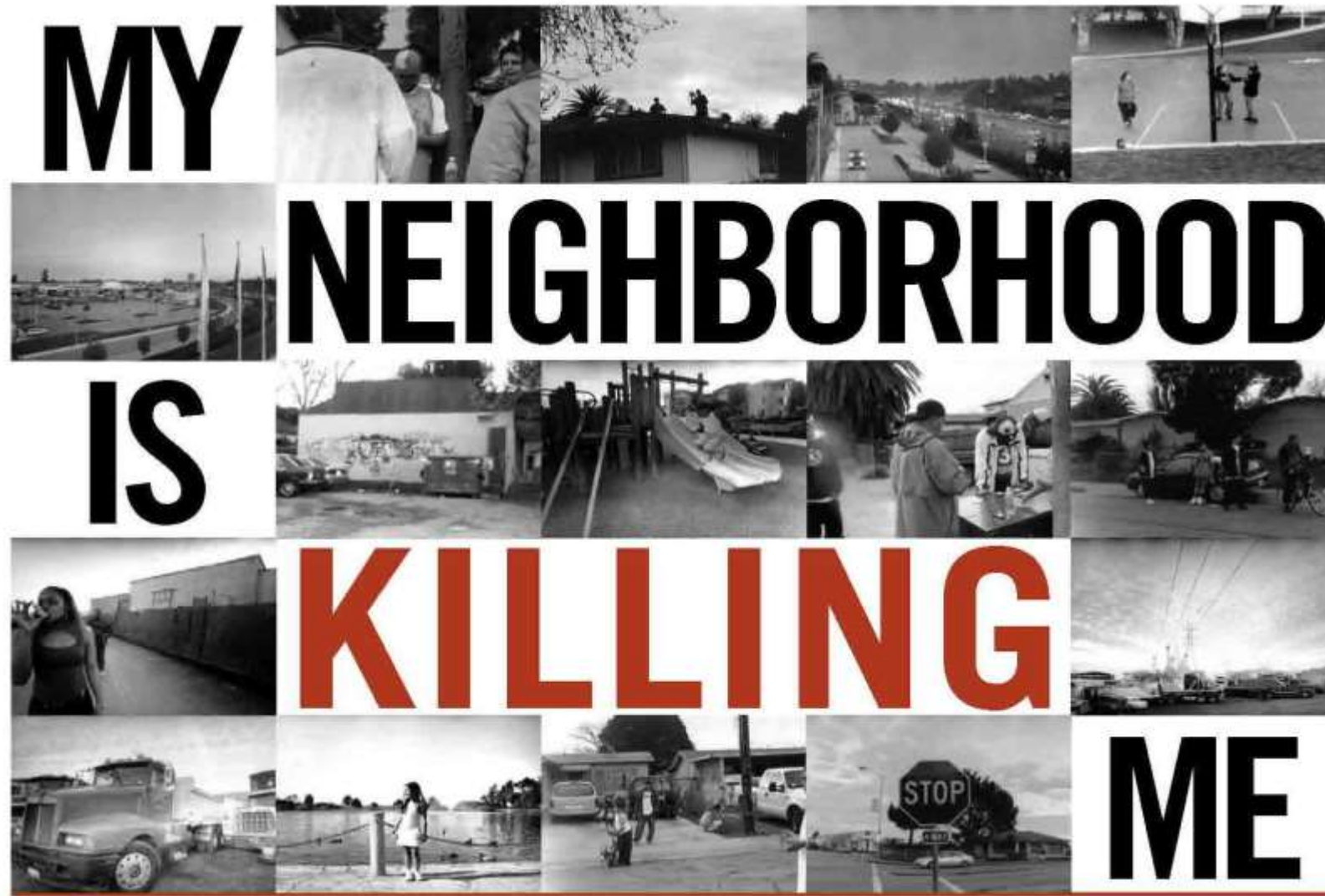


The background of the image is a composite. The top right portion shows an aerial view of a dense city skyline with numerous skyscrapers and buildings. The bottom left portion shows a lush green forest with tall trees and a path. A large, semi-transparent green rectangle is overlaid in the center, containing the title text in white.

URBAN ECOLOGY & ENVIRONMENTAL EDUCATION







INTERSECTION WITH SOCIAL JUSTICE

CITIZEN / COMMUNITY SCIENCE MODEL



APPROACHES TO CITIZEN SCIENCE



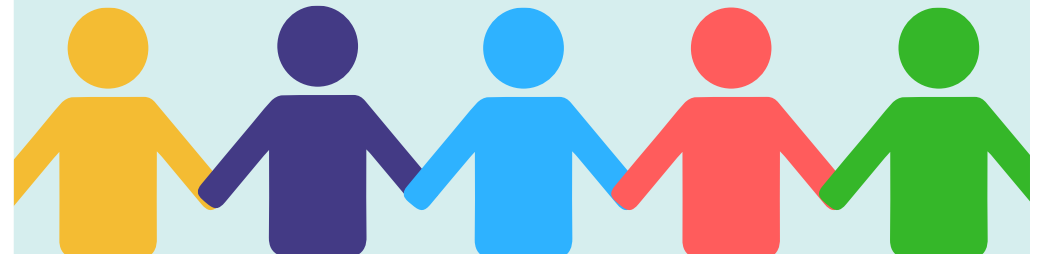
EXPERT DRIVEN

Citizens gather data
pre-determined by
scientists or officials

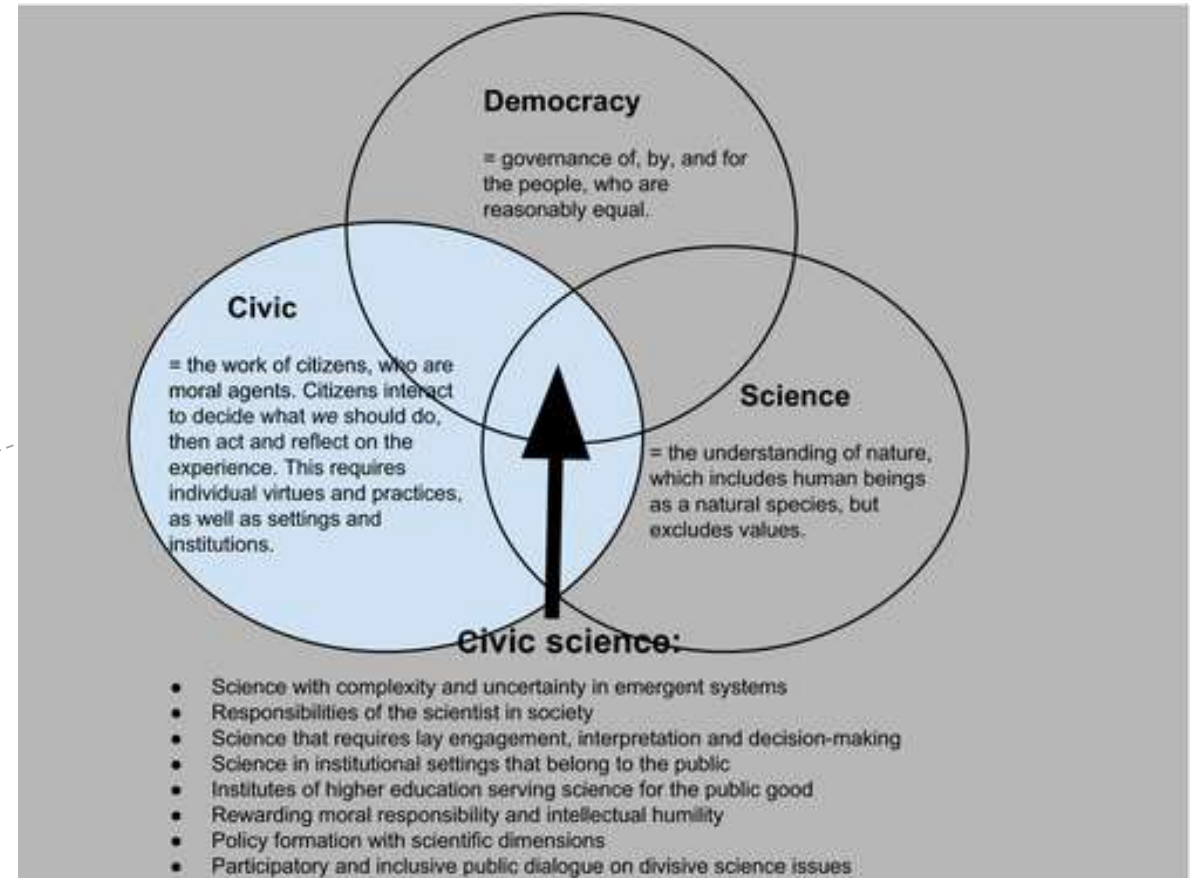
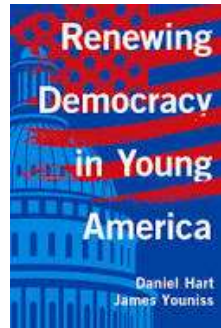
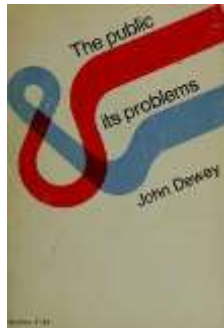
CITIZEN DRIVEN

Collaborative
learning & action
approach to framing and
addressing public problems

Horizontal
Multiple Sources of Knowledge
Focus on Local Place



CIVIC SCIENCE



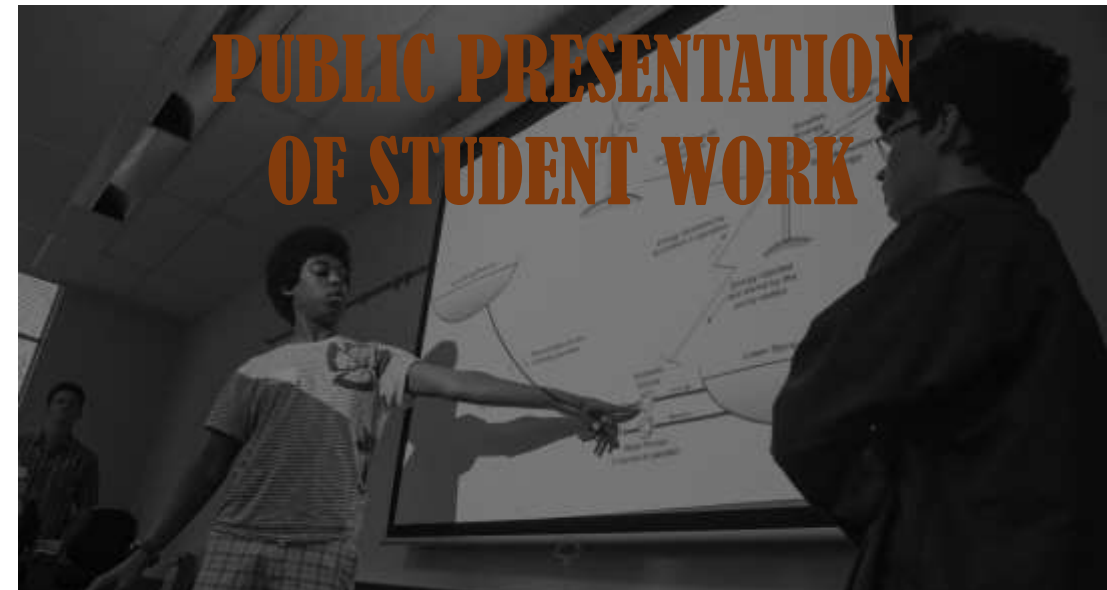
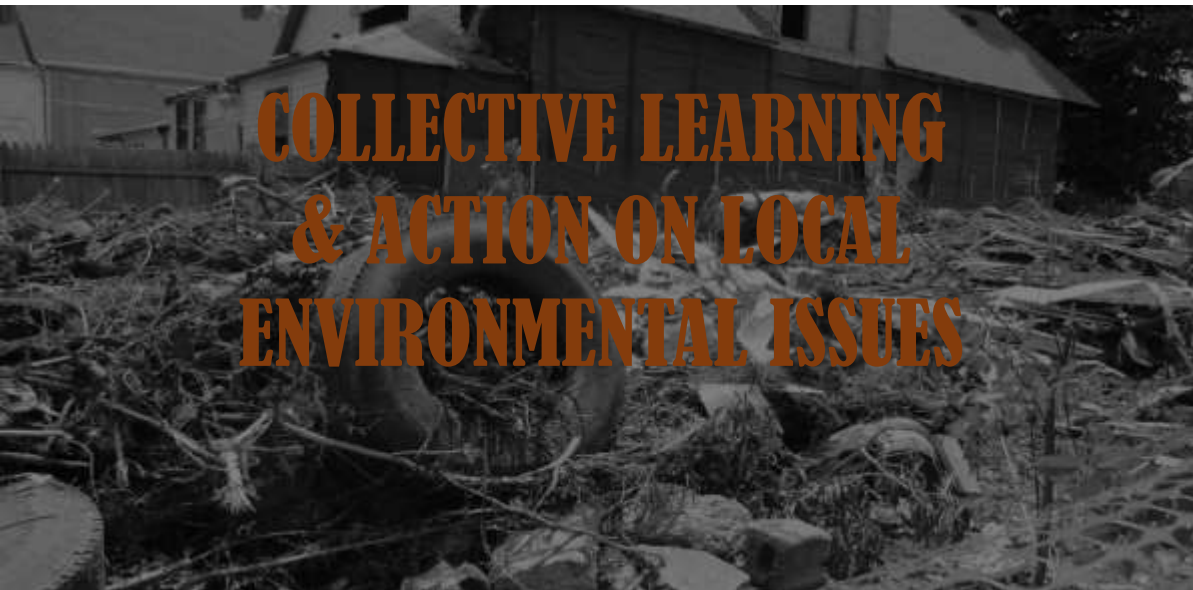
Garlick, J., & Levine, P. (2017). Where civics meets science: Building science for the public good through Civic Science. *Oral Diseases*. <http://doi.org/10.1111/odi.12534>



PLACE-BASED EDUCATION

Respects the importance of *local place* and a community's unique environmental context as foundation for learning.

CORE PEDAGOGICAL PRACTICES





Testing and Recording Water Quality of Local River with STEM Partners



Ecosystem Services & Green Infrastructure: Mitigating Flooding on School Grounds by Installing Porous Pavement

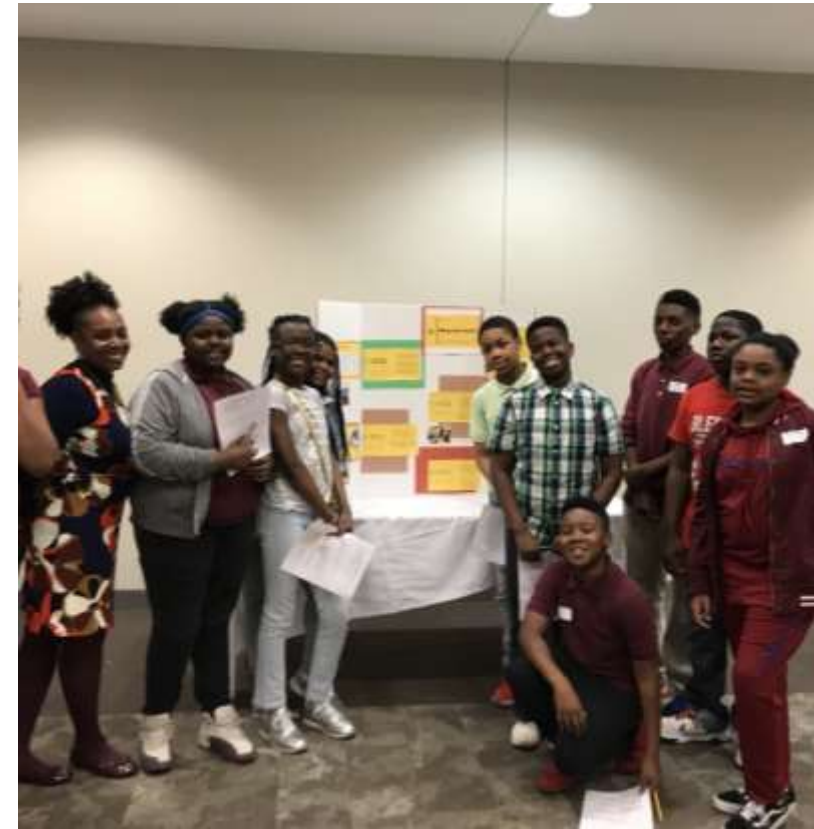
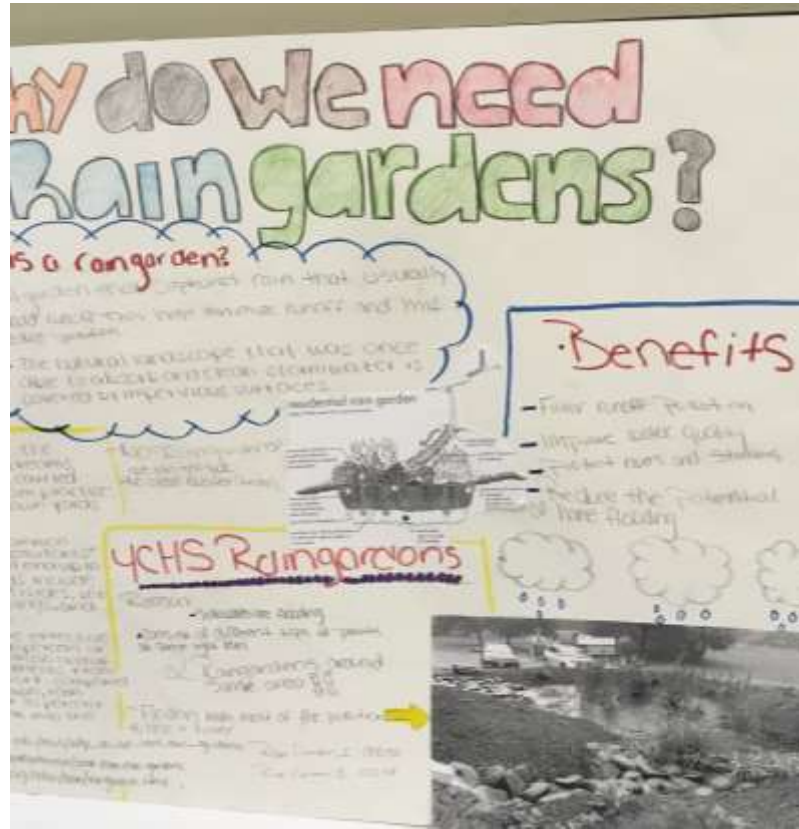
Ecosystem Services & Green Infrastructure: Mitigating Flooding on School Grounds Porous Pavement



Ecosystem Services & Green Infrastructure: Mitigating Flooding on School Grounds

Rain Gardens





Researching and Finding Solutions & Public Presentation of Projects

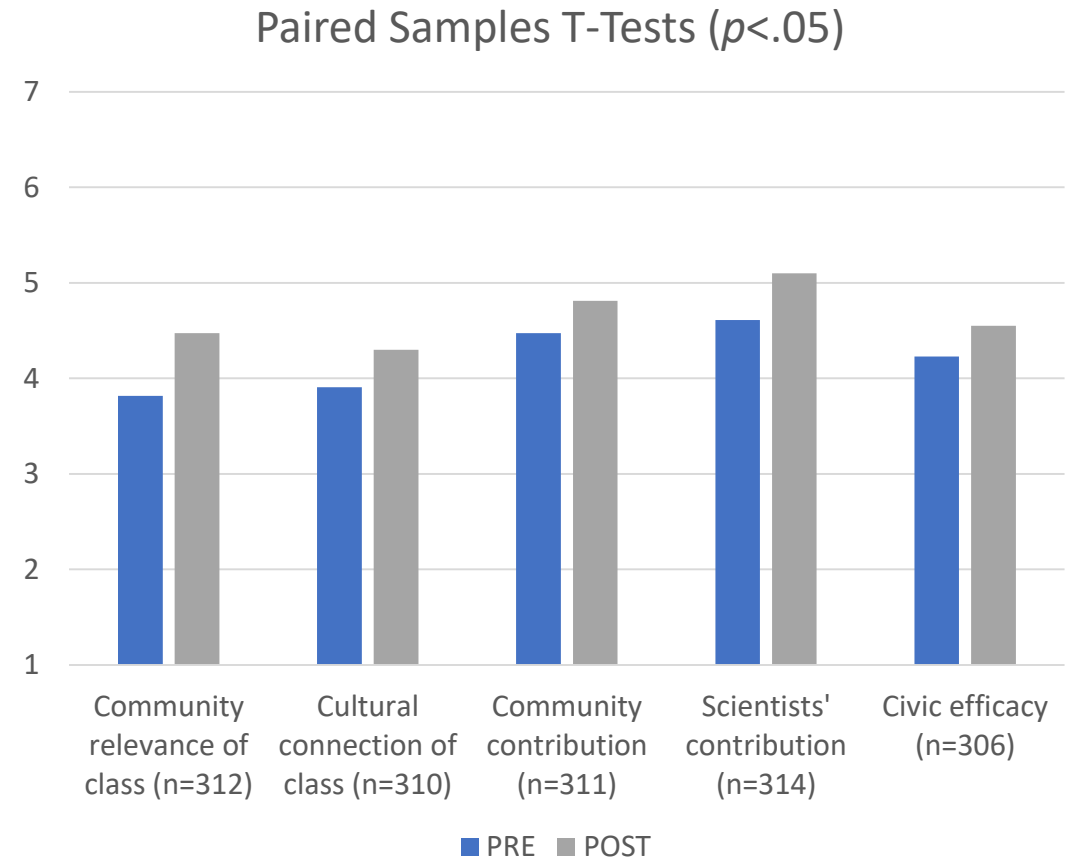
DOCUMENTING THE MODEL AND STUDENT LEARNING

MULTI-METHOD STUDY APPROACH

- Engagement over 7 years
- Close relationship with teachers and community partners
- Pre-/Post- surveys – multiple years
- Analyses of student reflections and work
- Focus group interviews
- Observations
- Current Studies: In-depth look at 4 high school classes; large scale study with 24 middle- and high school classes

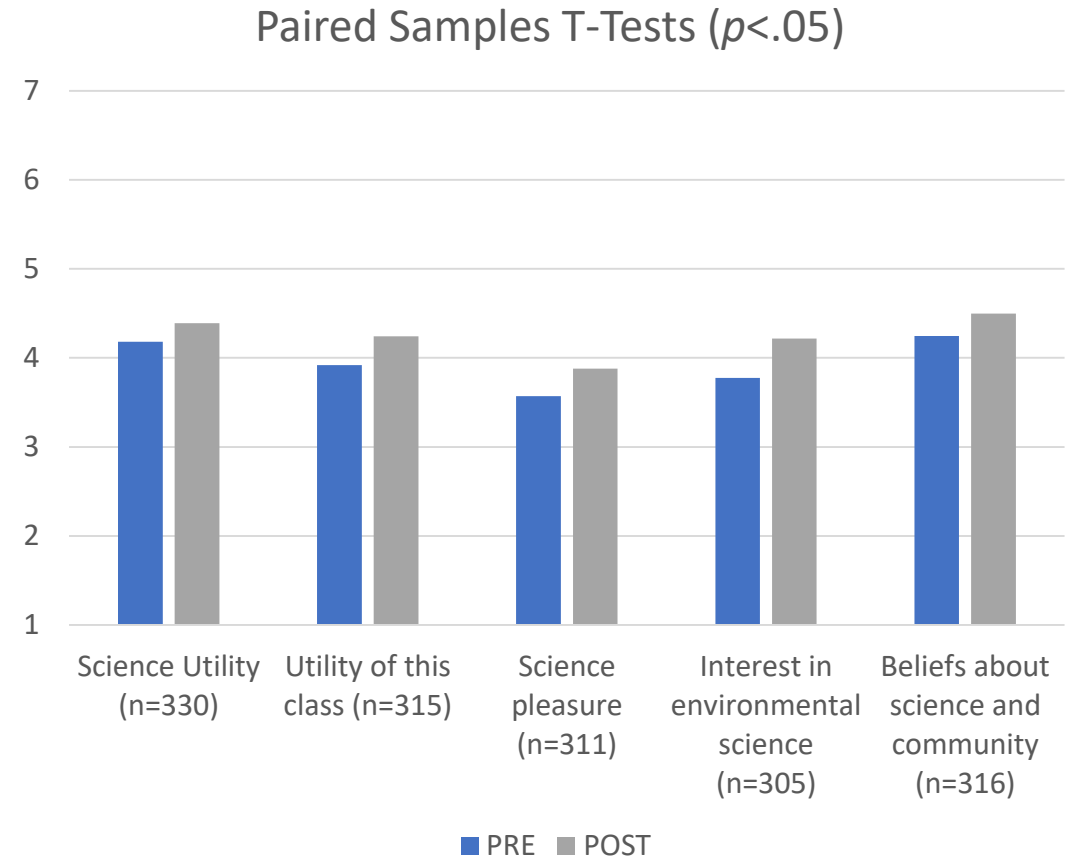
Pre/Post SURVEY: COMMUNITY SCIENCE GAINS

- Community relevance of class
- Cultural connection of class
- Community contribution of science-related job
- Scientists' contributions to communities/families
- Civic efficacy



Pre/Post SURVEY: COMMUNITY SCIENCE GAINS

- Utility of science
- Utility of their science class
- Science pleasure – enjoy a job using science or knowledge of science
- Interest in Environmental Science
- Beliefs about science and community



ENVIRONMENTAL COMMONS



&



What did you learn from your project?

ENVIRONMENTAL COMMONS: NATURAL RESOURCES ON WHICH LIFE DEPENDS

- Awareness of Nature in Urban Space
- Diversity and Ecological Balance in Nature
- Interdependence
 - ❖ Healthy natural systems and species' well being
 - ❖ Between health of humans and other living things
- Environmental Identity
- Human Impact and Agency

AWARENESS OF NATURE IN URBAN SPACES

- I learned that Detroit has two water systems that come from the Rouge and Detroit Rivers.
- My community around my school has more wildlife than I thought.
- You get **out of your comfort zone** and not a lot of people like how that sounds but you just get out and **be more part of, be more part of nature** and that really helps.

ENVIRONMENTAL IDENTITY

The walk through [The Park] has been so wonderful. I never cared about nature but now I do.

I've learned that if we continue to do harmful things to **our river**, we will regret it in the future

I learned if we litter that will end up being in **our watershed**.

HUMAN IMPACT AND AGENCY

The work I did in learning about community gardens was important because it was brought to my attention how much of a food desert [our city] is and how creating something like a community garden can combat it.

The things we did in the community. I check up on it every time I leave school. The community is doing good people basements are not flooding no more.

What did you learn from your project?

ENVIRONMENTAL COMMONS: COLLECTIVE DELIBERATION AND ACTION IN PUBLIC SPACES

- Benefits and need for teamwork
- Dynamics within the group - interdependence
- Civic competencies gained in group work
- Collective efficacy
- Generativity
- Identifying with the broader community

BENEFITS AND NEED FOR TEAM WORK

Doing this filter project was a great chance to see what doing something together can get you. I also learned that with **teamwork & everyone's brain working together** you can accomplish anything

DYNAMICS WITHIN THE GROUP – INTERDEPENDENCE OF GOAL

Of course, being in a group or a team **you don't like all the people at first.** You're going to have **some issues, some problems, some obstacles** but, you know, **at the end of the day you're all trying to do one thing**

That's make this school, this environment better, so, you know, you better **kick your problems to the side and get your stuff done.**

CIVIC COMPETENCIES GAINED IN GROUP WORK

I have learned how to understand, help, and communicate with people in school as well as total strangers

[I learned] that kids can solve environmental problems, that they can come together and listen to ideas and think of ways to make change and make everyone feel involved

COLLECTIVE EFFICACY

My work with [The Park Project] has helped me learn that **with the help of my peers, I could make a difference** in my community. Kids have much more power than they think.

GENERATIVITY

It also made me think about the world in a different/better way that could help future generations

IDENTIFYING WITH THE BROADER COMMUNITY

It was important for me to work and **be a member of the [Environment Team]** because it **helped me believe in my community.**

At first I really didn't care about my surrounding but working with the [Environment Team] made me realize I need to do something about it. Also **my community changed a lot because it looked better than it was before I started being in the community.**

IDENTIFYING WITH THE BROADER COMMUNITY

Detroit will grow back again [and that's important] because I've lived here most of my life and **it's part of me.**

The stewardship project **changed how I see community.** It's not just council and the mayor.

We have to take charge of our community. Take care of and help little ones grow up in our community.

You don't have to sit around and wait for the big man to come around. We can do it. **Don't just go to people with power, go to the citizens.** The more citizens, the people are together, the more power we have.

CLOSING THOUGHTS

*“The issue at the heart
of democracy is not
the making of
decisions, but rather...*

*the **authorship**
of decisions, that is,
who gets to decide.”*

*– Robert Post,
Dean, Yale Law School*



THANK YOU TO OUR FUNDERS AND COLLABORATORS



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The students, teachers, and community partners!



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