



AFTERSCHOOL
STEM HUB

The Intersection of Community Values and Program Evaluations

June 24, 2020

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Question to answer in the chat:

For you, what community value is most pressing right now? (Or what are you hoping to do MORE of?)



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Webinar Agenda

- December Convening Background
- Overview of Products: Literature Review and “Map”
- Panel of Convening Attendees
- Small Group Discussions via Breakout Rooms
- Opportunity to Share Common Interests and Needs

Convening Objectives

- Understand the current state of evaluation and measurement tools in afterschool STEM programs.
- Address the need to monitor the quality and outcomes of a wide range of programs.
- Produce
 - a detailed, visual representation of the range of outcomes that afterschool programs are seeking to achieve;
 - a taxonomy of current evaluation instruments aligned to these outcomes; and
 - an identification of overlaps, gaps, and needs in order to guide practitioner choices about which tools to use and when, and to point to contributions that researchers can make by adapting existing instruments or creating new ones

Attendees

People who care about learning STEM during out-of-school time

- Practitioners
- Researchers
- Evaluators
- Funders

Convening Structure

- Day 1 (Practitioners & Funders)
 - Visualizing current state of STEM learning assessment
 - Program perspectives on STEM outcomes & measurements
 - Reflections
- Day 2 (Everyone)
 - Sharing tools
 - Perspectives from RPPs
 - Summary of emerging issues
- Day 3 (Researchers & Funders)
 - Researchers add to visualization
 - Articulate values
 - Reflection and what's next

Emergent themes

- Racial equity and social justice as a core commitment and motivation for OST STEM Programs
- Programs and the Communities of Color with whom programs partner, have specific, locally instantiated demands for how this looks in STEM learning/afterschool spaces
- Can a set of common measures assess a program's efficacy and inform the program on how to better advance toward this core mission, or does the field need something else?

Goals

- Synthesize a broad collection of OST STEM measurement tools
- Better understand how STEM learning impacts equitable student outcomes



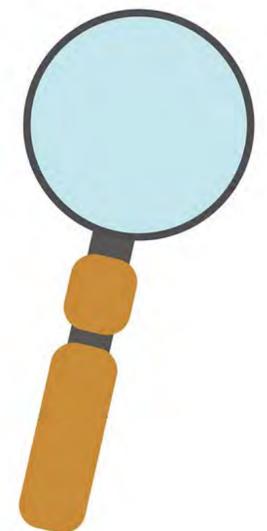
Conducting the research

Framing

- Equity in Informal STEM Education (Philip & Azevedo, 2017)
- STEM Learning Ecosystems (Barron & Bell, 2016; Bevan, 2019)

Method

- Searched OST STEM databases
- 76 measures, grouped into 10 categories



What we learned

Findings

- Individual achievement
- [Science], Technology, Engineering, Math

Feedback

- Additional tools
- Defining equity



Building the “Map”



Leah Silverberg

*STEM Projects & Field
Outreach Associate
Afterschool Alliance*



Reminder of Convening Format

- Disseminators, Practitioners, and Researchers
- Agenda Overview





Mapping the state of the field

Map base layer: Constructs from literature review

- Are there high-level constructs missing? (Use matching large Post-its)

Next layer: Programmatic outcomes

- Summarize outcomes (medium Post-its) and align with construct that most closely relates.







WHY? RESEARCH Qs NEEDS ACTIONS

The whiteboard is divided into four main sections: 'WHY?', 'RESEARCH Qs', 'NEEDS', and 'ACTIONS'. Each section is filled with handwritten notes on colorful sticky papers. The 'WHY?' section contains several columns of notes. The 'RESEARCH Qs' section has a few larger notes and smaller ones. The 'NEEDS' section has a few notes, including one with a star. The 'ACTIONS' section is the largest and contains many notes, some with stars. A smaller whiteboard with notes is positioned in front of the main one.





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Questions and Discussion

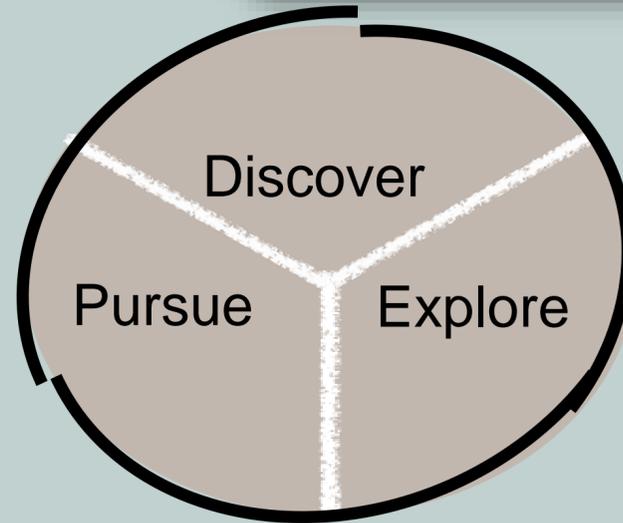
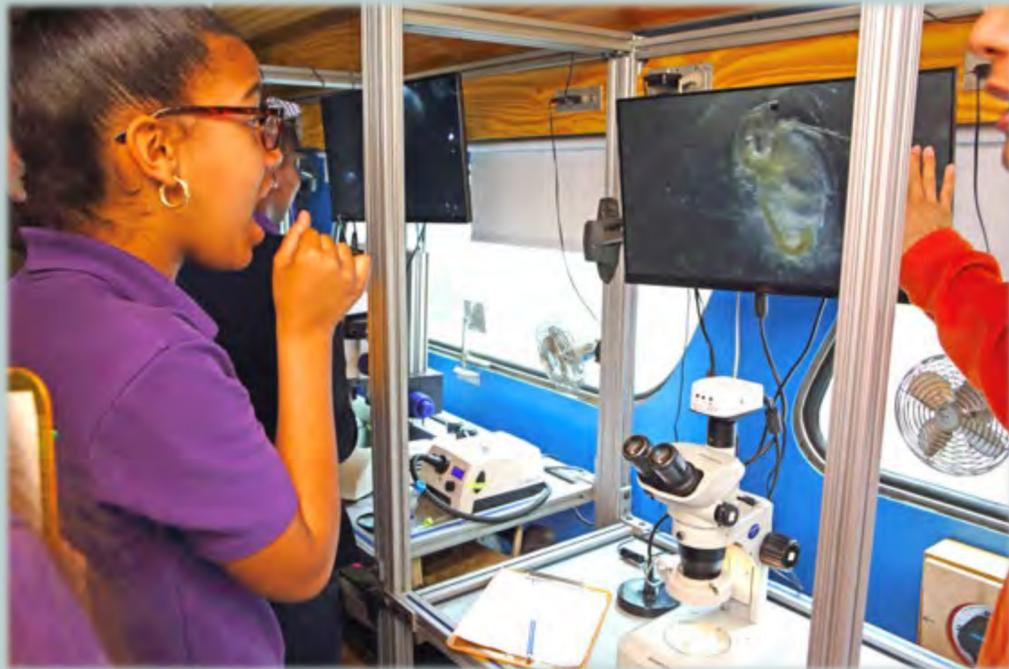
BioBus

a grassroots approach to building a scientific community

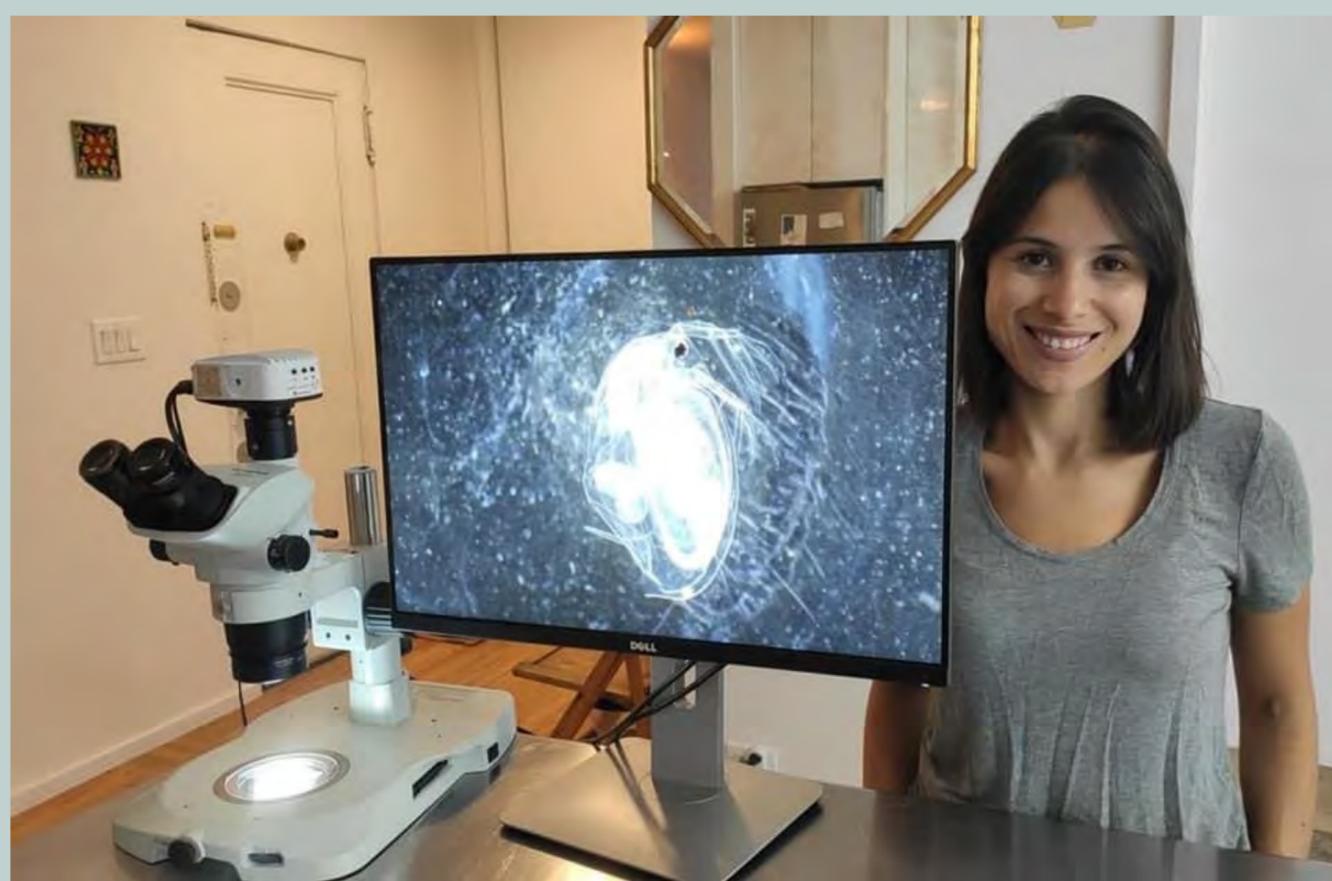
Latasha Wright, PhD
latasha@biobus.org
Chief Scientific Officer
BioBus, Inc.



Vision: All people achieve their full scientific potential



Student Town Halls



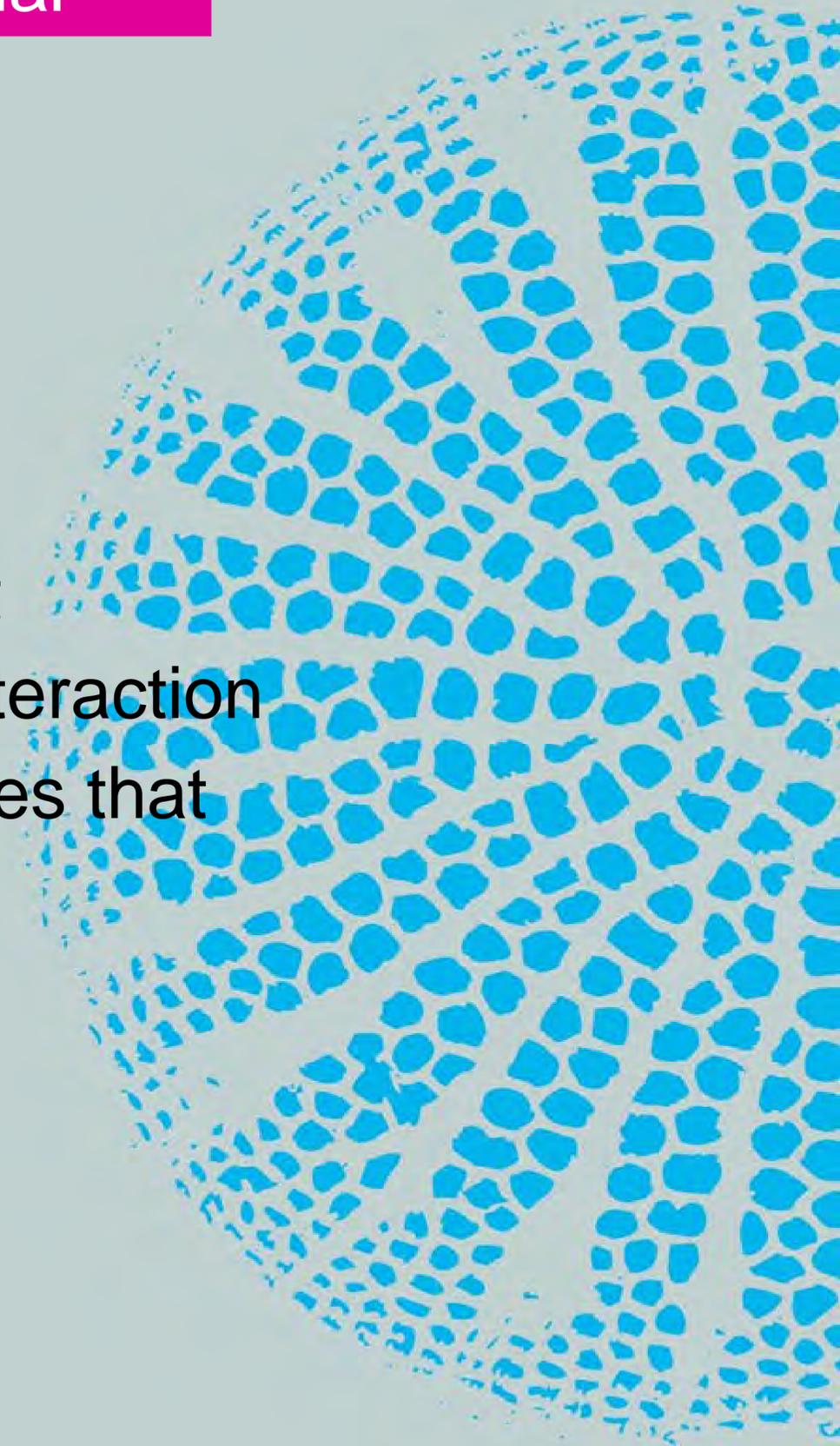
Explore!
at Home

Discover!
at Home



Vision all students reach their scientific potential

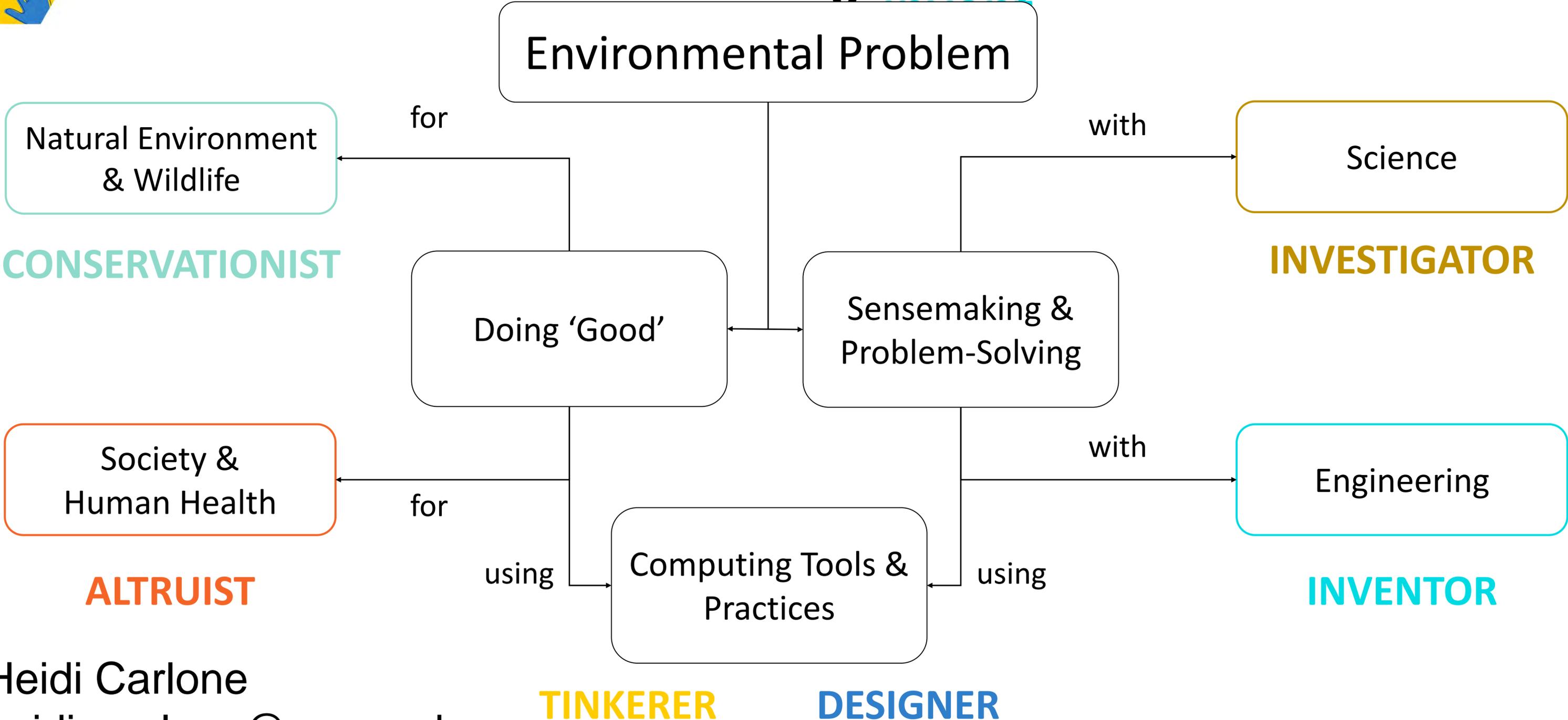
- 1) Sustained high quality of engagement of students
- 2) Building inclusive scientific community
- 3) Student voice is guiding light of curriculum development
- 4) in person vs remote: Same high impact and personal interaction with scientists → Follow up with hands-on engaging activities that students can do alone or in classrooms





Pedagogical Framework

We **care**, **conserve**, **tinker**, **design**, **investigate**,

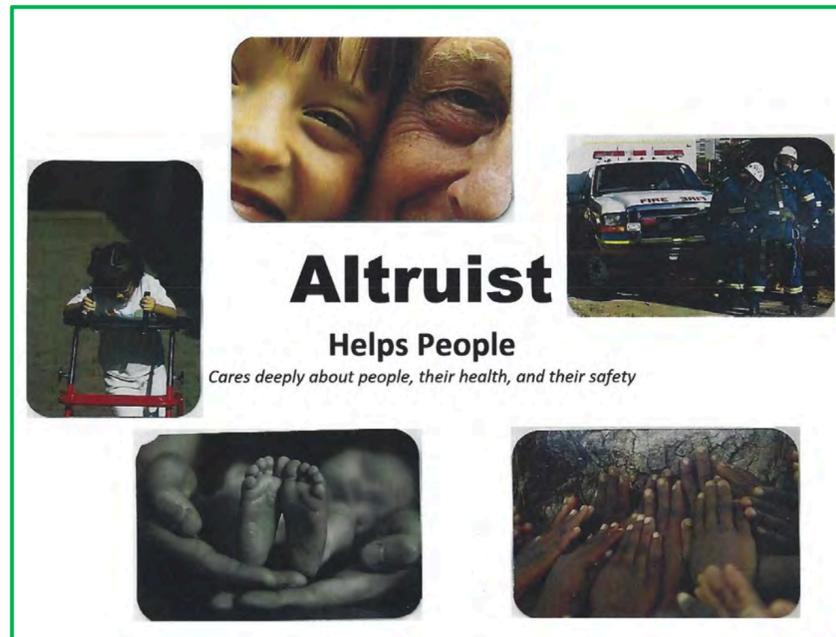


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Aligning Framework with Curriculum

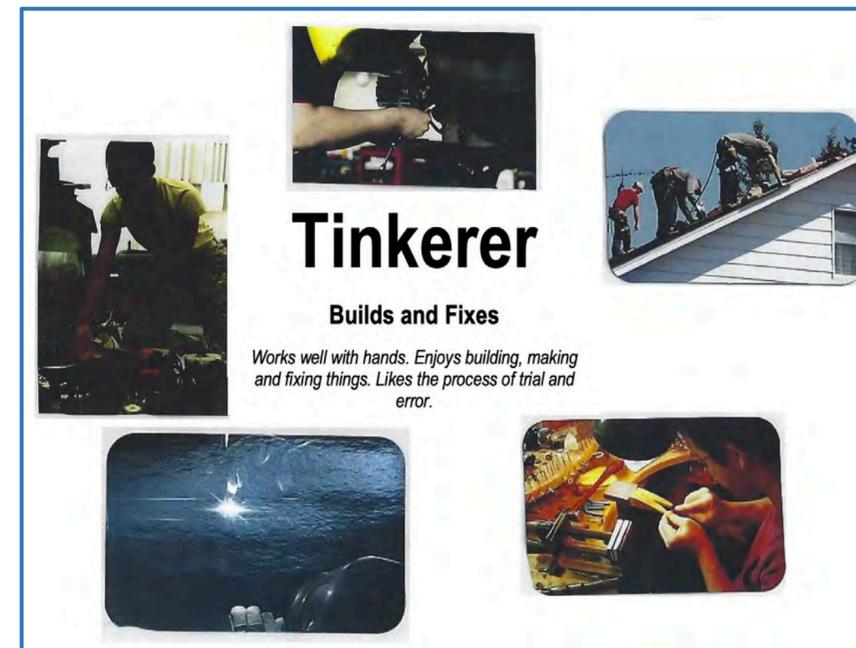
Driving Questions	Sub-Questions	Activity	STEM Profile Alignment					
			C	Invest	AI	T	D	Invent
Is this habitat healthy?	How clean is this water?	Chemical water quality testing	x	x	x	x		x
	What is living here?	Searching for Macroinvertebrates Micro-Aquaria	x	x			x	x
Where does stormwater go?	What is a watershed and how can it become polluted?	Watersheds: Our Water, Our Homes Activity with Small EnviroScapes	x	x	x	x		x
	Where are potential problems with stormwater? How can we solve those problems?	Stormwater Sleuthing Card Sort	x	x	x		x	x
How can we manage stormwater runoff?	How is a human-designed environment problematic for stormwater runoff?	Google Earth Time Lapse	x	x	x		x	
	What is the relationship between infiltration rates and stormwater runoff?	Infiltration Tubes		x	x	x		x
	Design a pavement that is both permeable and walkable.	Permeable Pavement Engineering Design Challenge		x	x	x	x	x
	Design a way to manage stormwater runoff in a township	Best Management Practices Engineering Design Challenge	x	x	x	x	x	x

What seems most like you?



Altruist
Helps People
Cares deeply about people, their health, and their safety

This poster features a central image of a young child and an elderly person smiling together. Surrounding this are several smaller images: a person in a white coat pushing a red gurney, a fire truck with firefighters, a pair of hands holding a baby's feet, and a group of hands joined together in a circle.



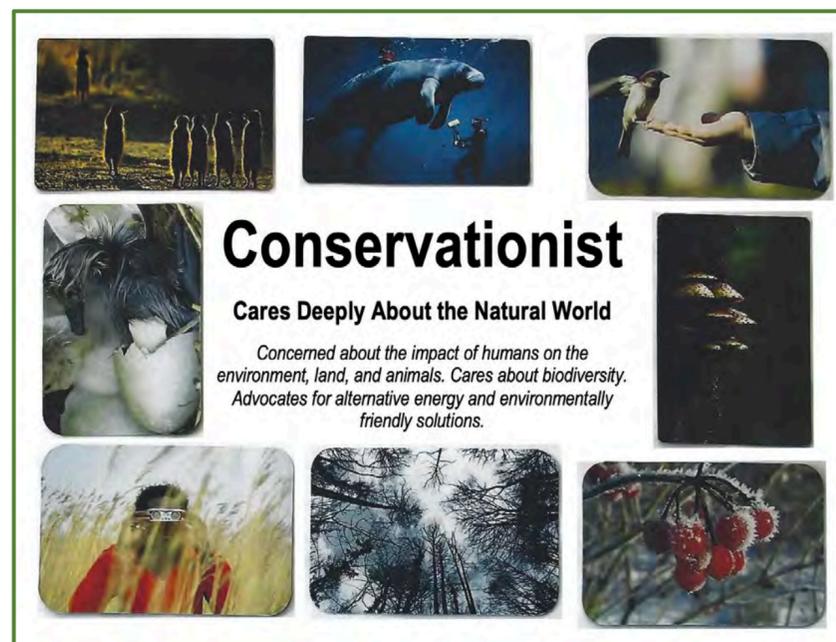
Tinkerer
Builds and Fixes
Works well with hands. Enjoys building, making and fixing things. Likes the process of trial and error.

This poster shows a person working on a mechanical device. Other images include a person on a roof, a person working on a car engine, a person using a power drill, and a close-up of hands working with tools.



Inventor
Comes Up with Creative and/or Logical Solutions
Enjoys working through complex puzzles, logic games. Likes to come up with imaginative and creative ways to solve problems.

This poster depicts a person working on a complex mechanical assembly. Other images include a target with arrows, a person working on a circuit board, and a person working on a large piece of machinery.



Conservationist
Cares Deeply About the Natural World
Concerned about the impact of humans on the environment, land, and animals. Cares about biodiversity. Advocates for alternative energy and environmentally friendly solutions.

This poster features a variety of nature-related images: a group of penguins, a polar bear, a bird, a person holding a bird, a close-up of a flower, a person in a field, a forest, and a close-up of red berries.



Designer
Makes Things Visually Appealing
Likes to be creative and make things that are visually appealing. Enjoys creating and designing things through drawing, painting, photography, or technology. Thinks about the beauty and function of a product.

This poster shows a person working on a laptop. Other images include a decorative metal lattice, a close-up of a woven basket, a colorful abstract painting, a close-up of a feather, and a close-up of a person's face.



Investigator
Studies and Explains Problems
Enjoys figuring out how and why things work. Likes to look at a lot of information to find patterns and themes.

This poster features a person looking at a microscope. Other images include a circuit board, a close-up of a flea, a person working in a laboratory, a close-up of a microscope lens, and a close-up of a person's face.

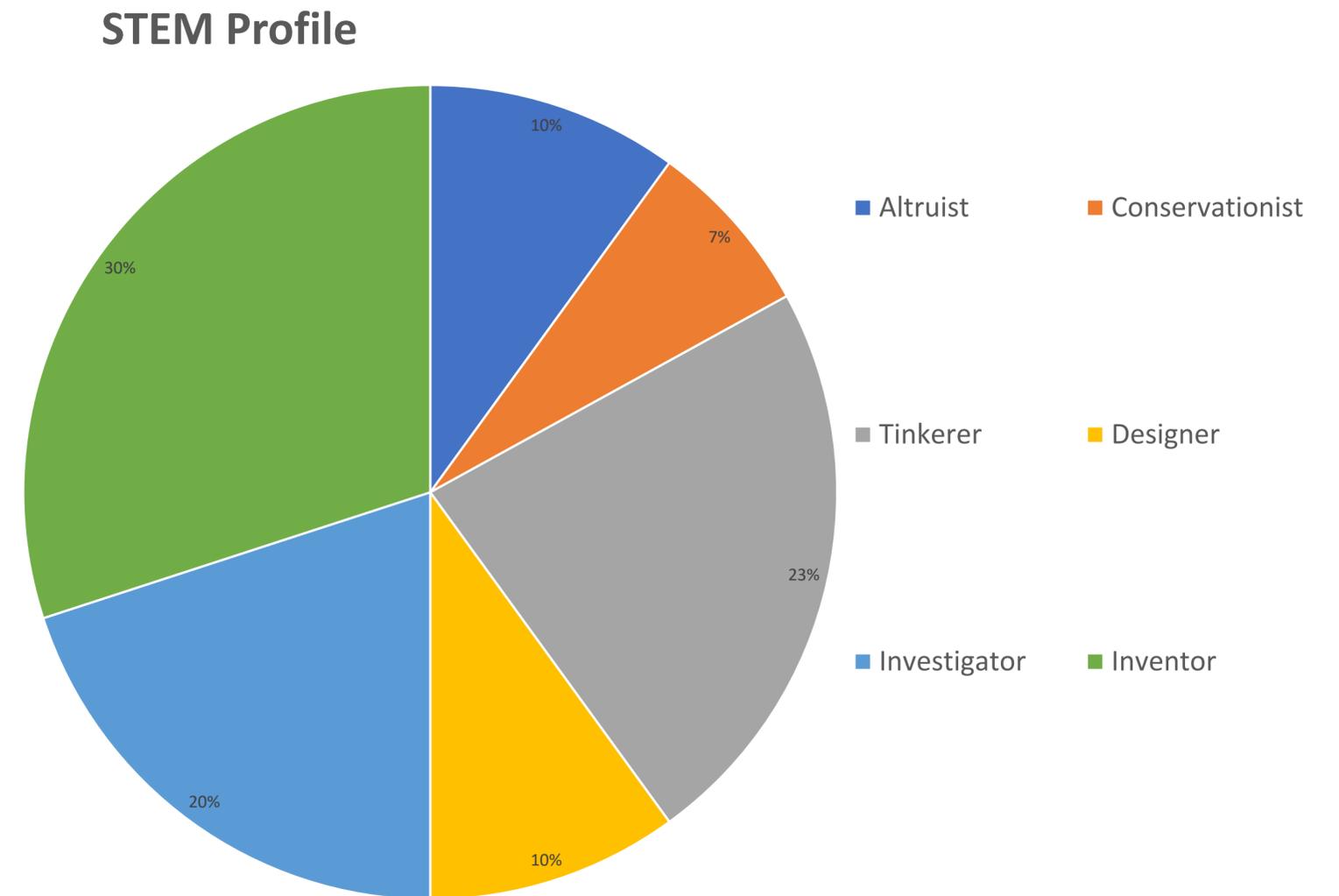
Place your name on the poster(s) that most align with your STEM interests

Your STEM Profile: What modes of engagement speak to you?



Based on your profile, you lean toward **inventor and tinkerer**. You are likely strongly interested in working through complex puzzles or imagining creative ways to solve problems. You are also likely interested in making things, taking things apart and putting them back together, and/or exploring things through trial and error.

Your lowest ranked category is **conservationist**. This could mean that you may not like or have had opportunities advocating for and working to preserve the environment.



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Project Team

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- **Evaluator:** Amy Germuth
- **Teachers:** from Triad NC regions
- **RAs:** Dearing Blankmann, Michelle Lovett, Alison Mercier, David Schouweiler, Ti'Era Worsley
- **Collaborators:** Megan Lancaster, Catherine Matthews, Ann Somers, John Willse, Rachel Wilson-Potter, Haw River State Park educators



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