Dr. Lauren B. Birney | Associate Professor of STEM Education
Pace University | School of Education
Director of the STEM Collaboratory NYC®
CCERS Principal Investigator
NSF DRL 1839656
STEM + C PI Summit; Arlington Virginia
September 19, 2019

"Integrating Environmental Restoration with Computer Science in New York Harbor with New York City Public Schools"

BOP CCERS Phase III

Lamont-Doherty Earth Observatory
Columbia University | Earth Institute
School of Education
Pace University
Billion Oyster Project
New York Harbor Foundation
Good Shepherd Services
We see what can be.
The River Project
NYC Department of Education
Wildlife Conservation Society
New York Aquarium
NSF
The New York Academy of Sciences
Building communities, advancing science since 1817
SMART START
Evaluation & Research
University of Maryland
Center for Environmental Science

Manhattan, New York – New York Harbor 2019
STEM + C in New York City and New York Harbor

Teacher Training

Student Curriculum

Digital Platform

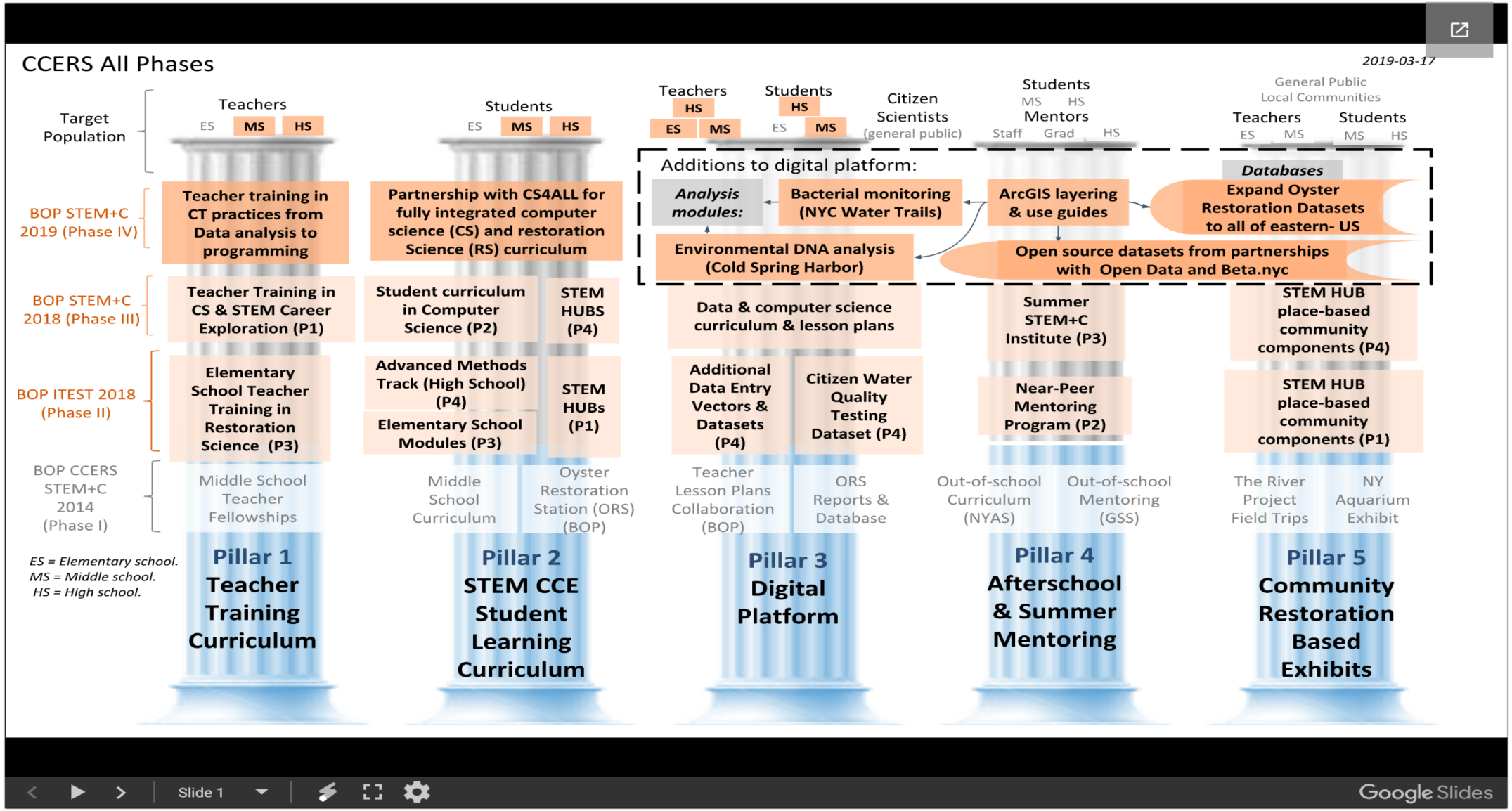
After School Program

Community Exhibits

An Educational Model Incorporating Computational Thinking and Computer Science through Environmental Restoration with Student Field Research and Inquiry Learning

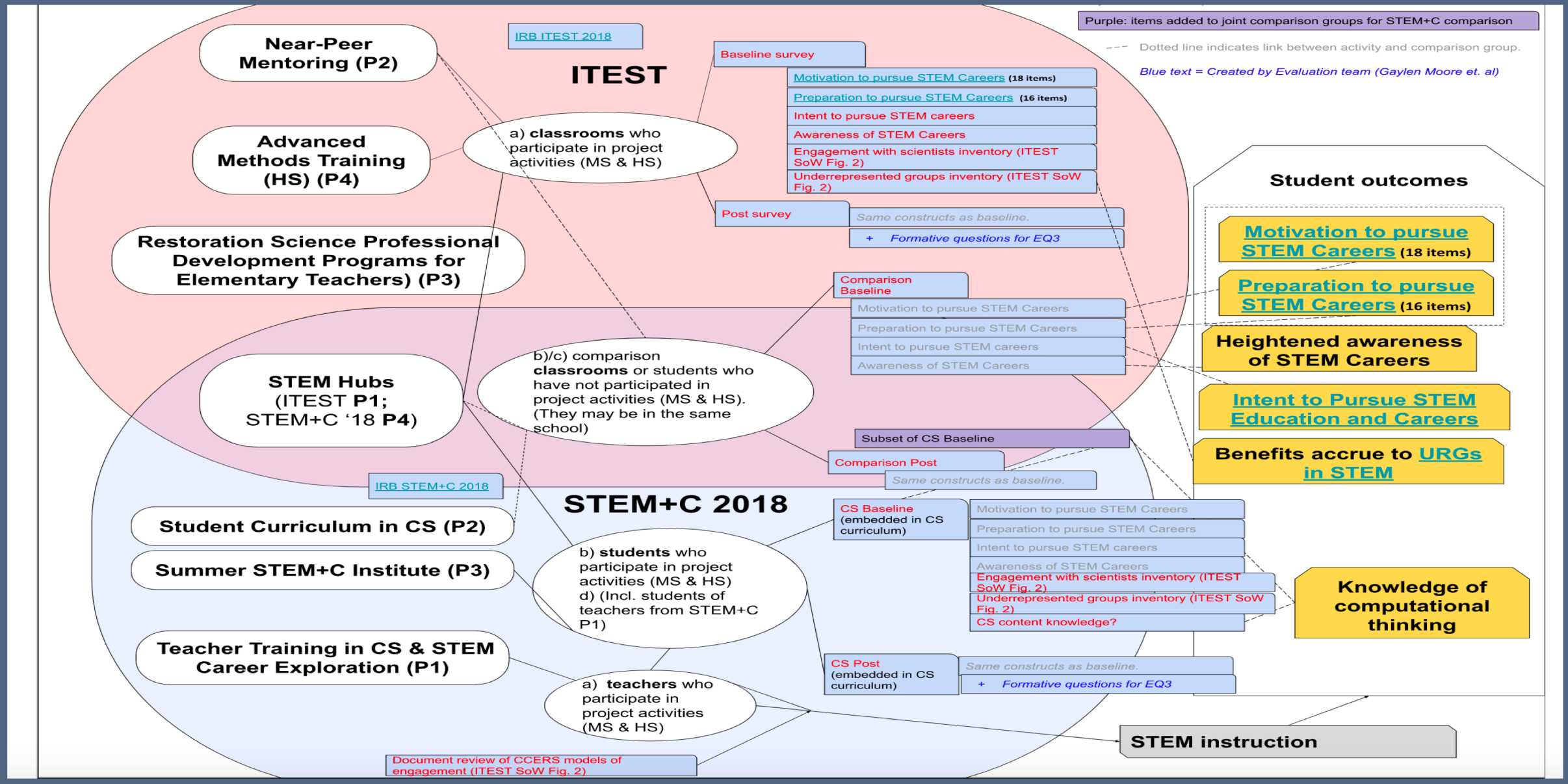
The Story of New York City Public School Students
STEM + C Computation Thinking through Environmental Restoration Sciences

BOP CCERS Project Implementation Research and Design Framework



Environmental Science Teacher Trainings with Computer Science, Data Science and STEM Career Exploration Student Curriculum with Computer Science, Data Science and STEM Career Exploration, Pillar 3: Summer STEM Institute for Middle and High School Students at Pace University Pillar 4: Community Based Restoration Science Hubs - "STEM Hubs"

BOP CCERS Phase II Research and Evaluation Plan



Pillar 1: Teacher Trainings with Computer Science, Data Science and STEM Career Exploration (NYCDOE, BOP, Pace University)

Pillar 1: Teacher Trainings with Computer Science, Data Science and STEM Career Exploration (NYCDOE, BOP, Pace) University)

Pillar 2: Student Curriculum with Computer Science, Data Science and STEM Career Exploration

Pillar 2: Student Curriculum with Computer Science, Data Science and STEM Career Exploration

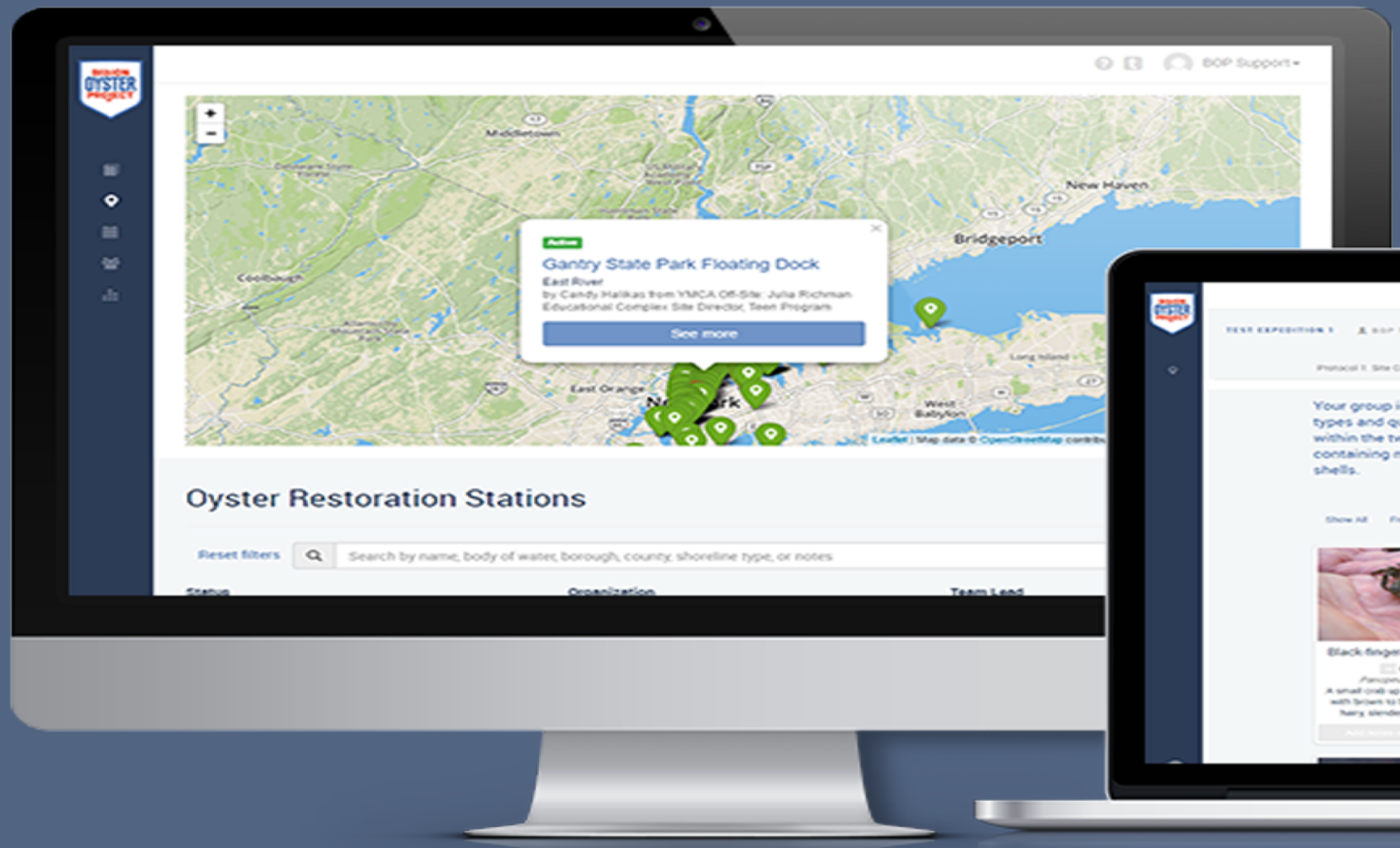
Pillar 3: Summer STEM Institute for Middle and High School Students at Pace University

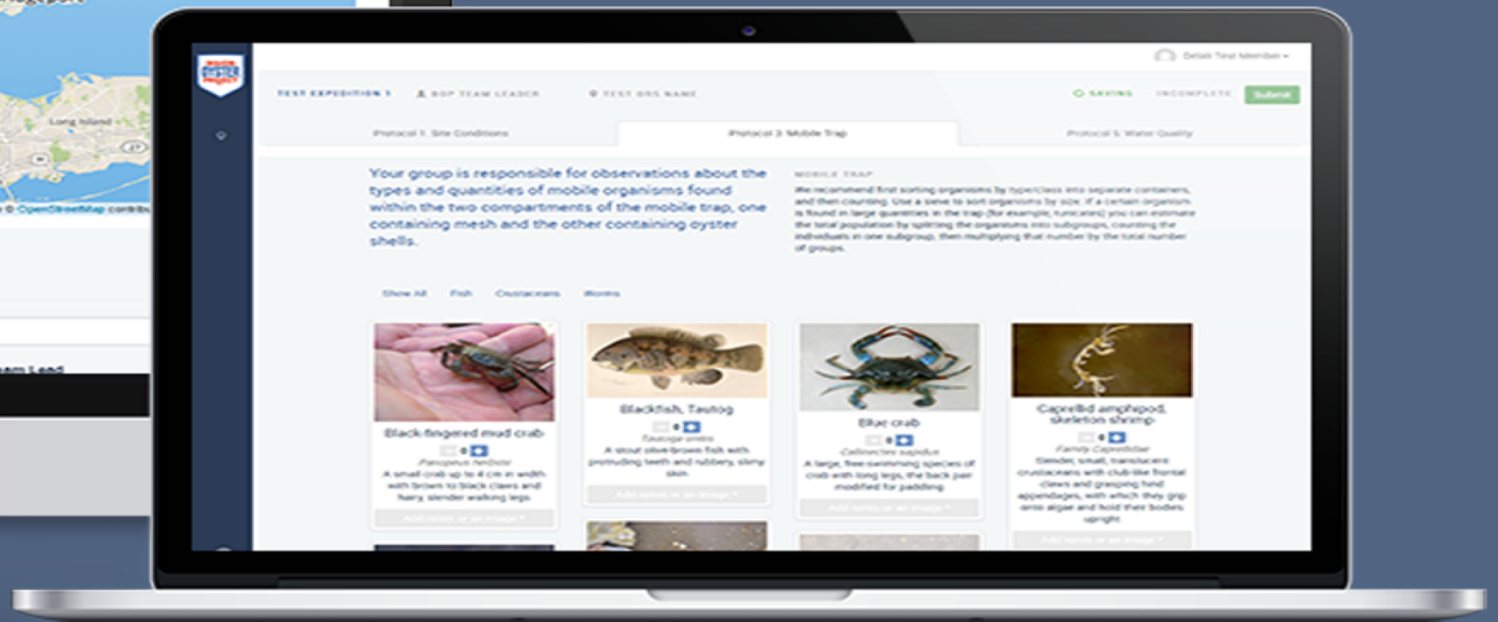
data	Turbidity before adding phytoplankton	1 hour after adding phytoplankton	3 hours after adding phytoplankton	24 hours after adding phytoplankton	48 hours after adding phytoplankton
June 4, 2018	35.2cm	62.2cm	39 cm	74.3 cm	72.3cm
June 13, 2018	65cm	61.2cm	72.1cm	67.1cm	73.5cm
June 14, 2018	61.2cm	75.2cm	55.2cm	74.9cm	61.5cm

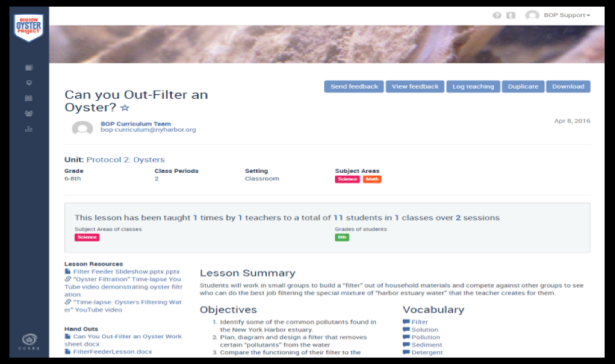
Pillar 3: Summer STEM Institute for Middle and High School Students at Pace University

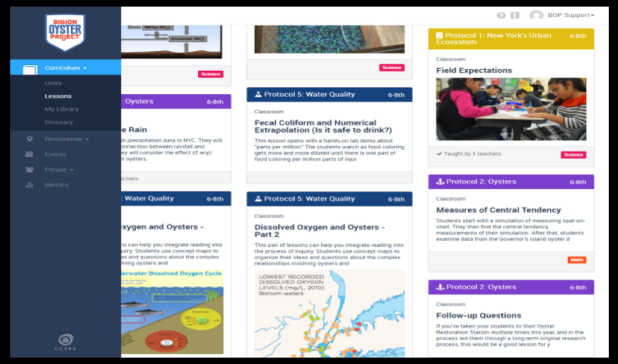
Center Tech HUB The BOP CCERS Digital Platform

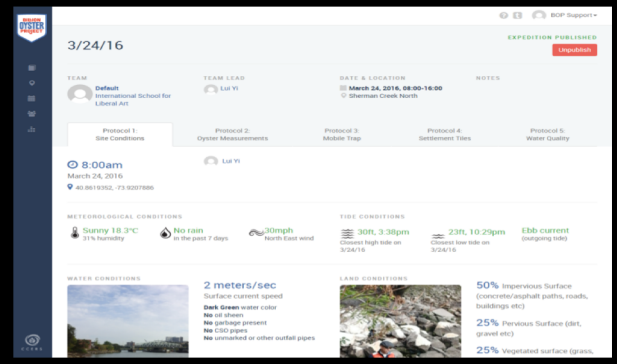
fearless

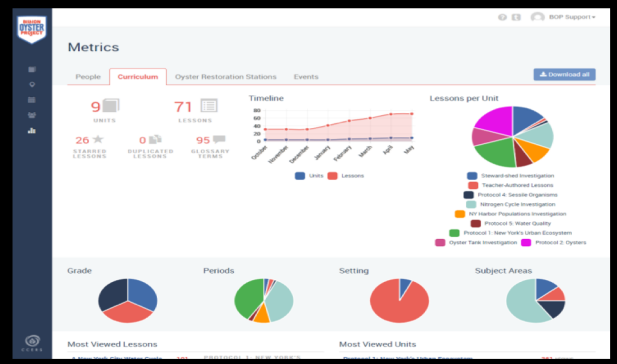












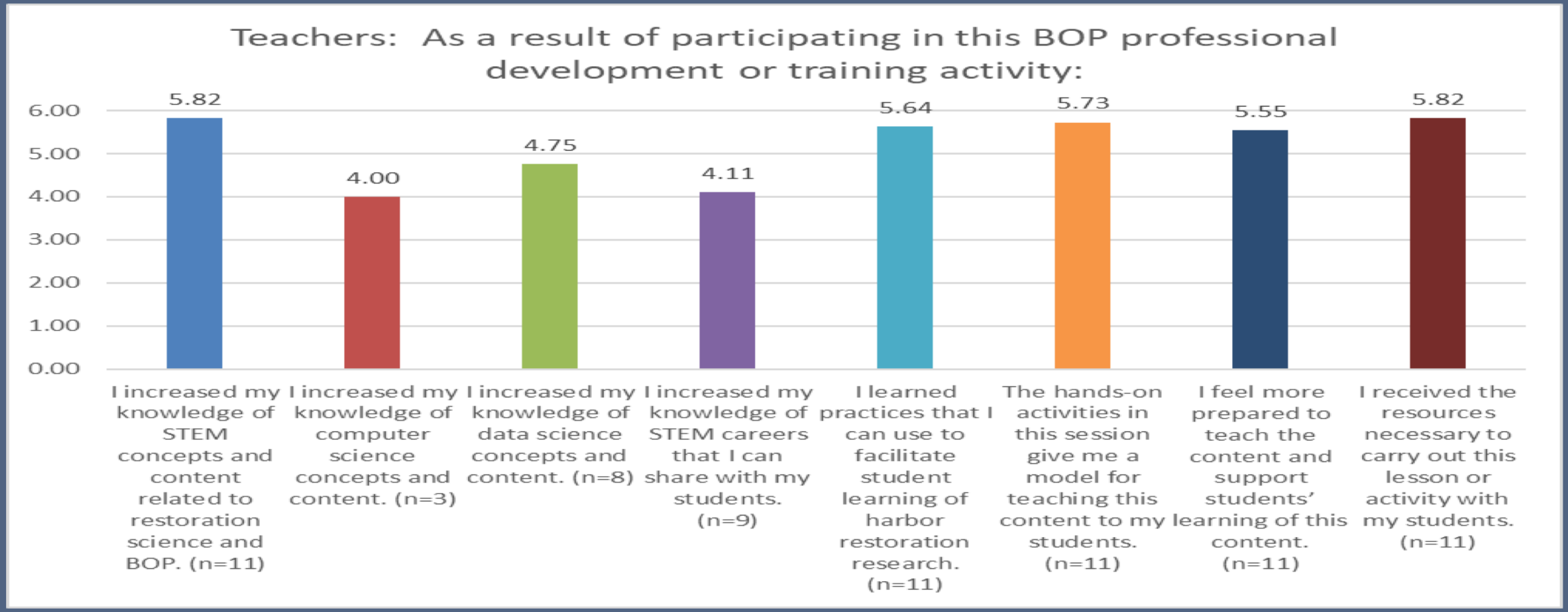
Pillar 4: Restoration Science Training Hubs in New York Harbor

Ben Von Wong

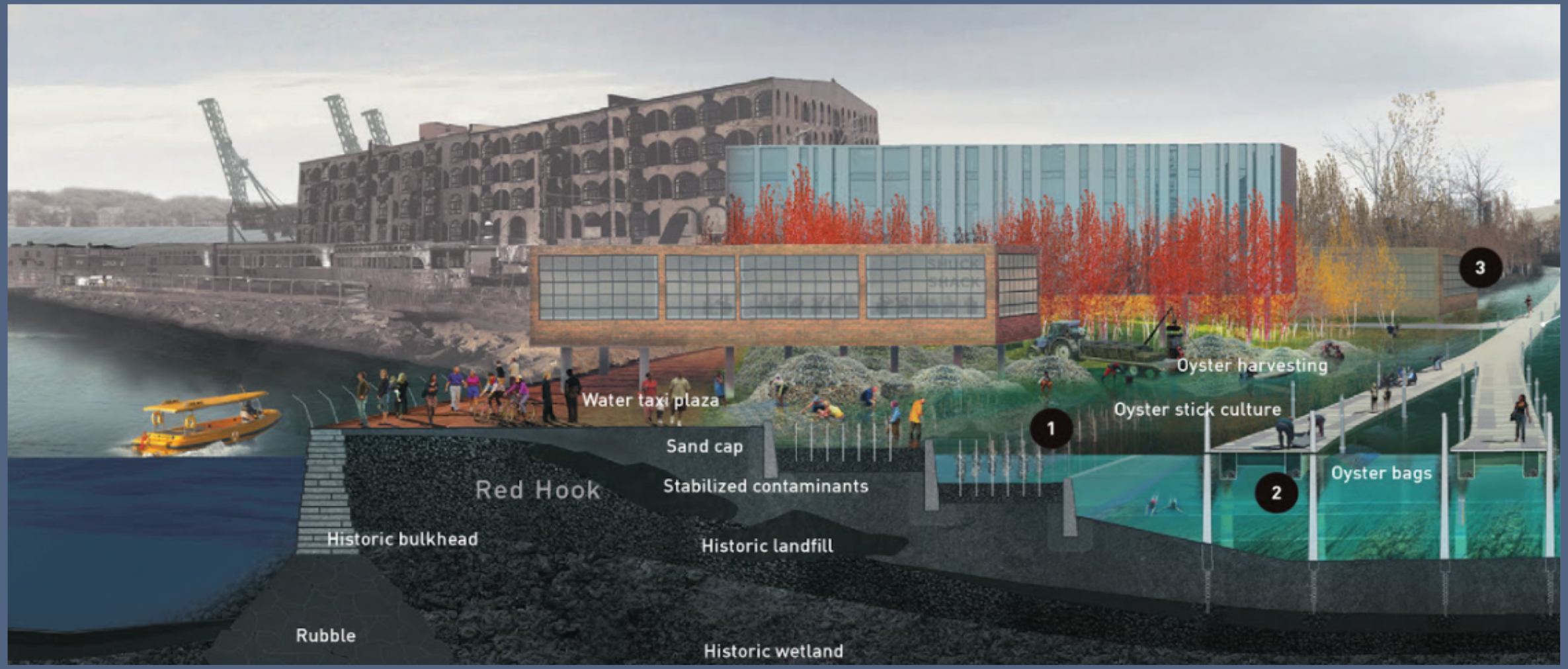
Pillar 4: Restoration Science Training Hubs in New York Harbor

STEM+C OYSTER RESEARCH STATION (ORS) BASIC TRAINING

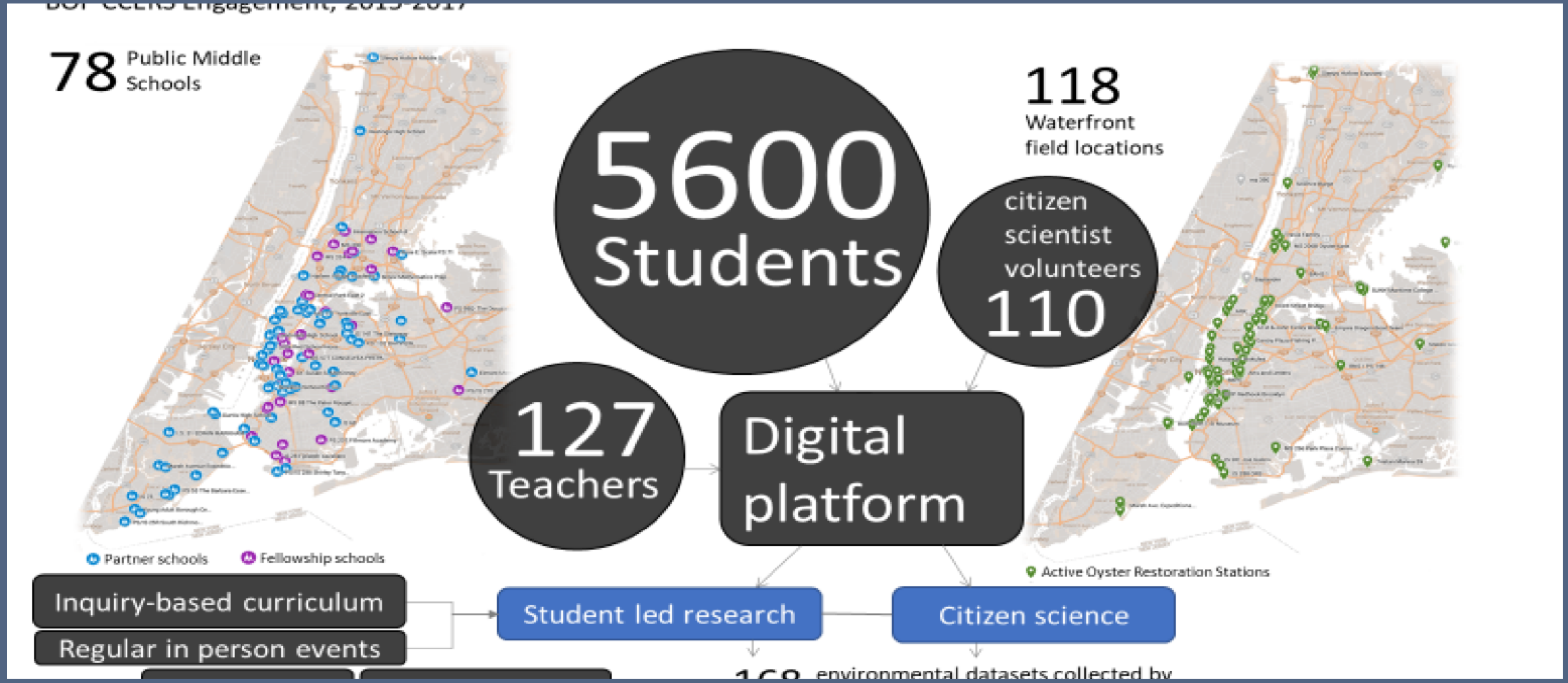
BOP STEM+C conducted Oyster Research Station (ORS) professional learning sessions on Governors Island for teachers, museum educators, citizen scientists and community volunteers to learn how to set up an oyster research station anywhere in the New York Harbor.



Potential STEM Learning Center and Oyster Park



Community Impact Factors New York City



Establishing a Project Footprint BOP CCERS Project Deliverables and Project Outcomes

Broadening Participation and Intellectual Merit

- Curriculum for Middle School Teachers
- Field Science Manual for New York Harbor
- Project White Paper
- Scholarly Publications and Articles
- Presentations, Symposia and Colloquia
- Videos and Film Productions
- Digital Monitoring Platform (Big Data)
- Permanent Displays and Exhibits at Institutions
- STEM Teacher Training Model Education
- STEM Mentoring Model
- Restoration Based Community Science Model
- Mobile Applications/Computer Science

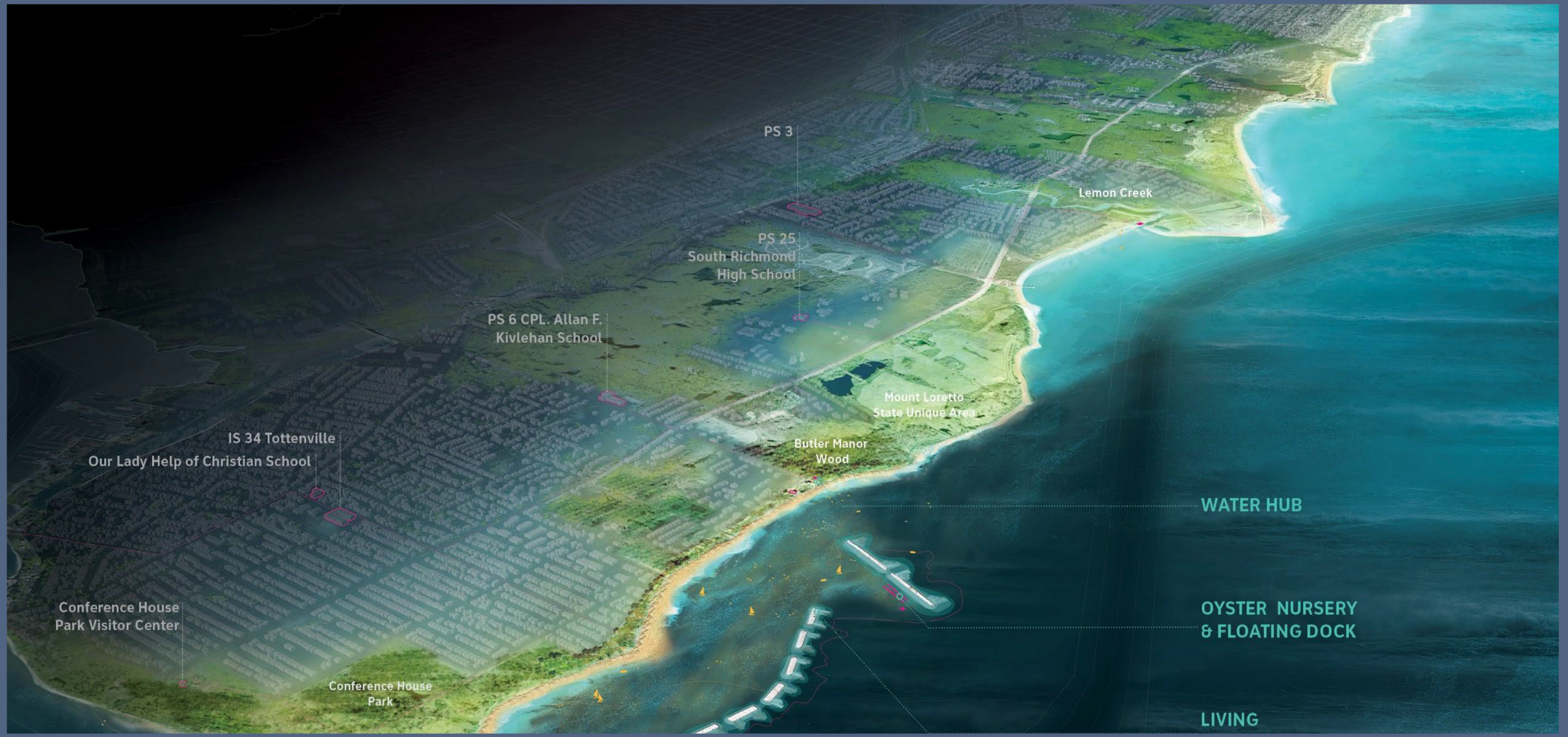
Computational Thinking and Computer Science through Environmental Restoration Sciences

Current Impact I: Global and Community Partnerships; Citizen and Community Science through Computational Thinking and Environmental Restoration New York Harbor, New York

Current Impact II: Engaging The Community of New York City In Environmental Restoration Research Community Exhibit and Training Facility at The New York Aquarium

Current Impact III: STEM Career Technical Training and Preparation for New York City Public School Students

Living Breakwaters – Staten Island, New York



Computational Thinking through Computer Science through Environmental Restoration Science
New York Harbor, New York

Future Impact I: New York Harbor Landscape New York Harbor 2022 (Design by Scape)

Future Impact II: The Living Breakwaters, Staten Island, New York 2024 (Designed by Scape)

Future Impact III: Partnerships CCERS Collaborative Research Model

The Collaborative Model

Intricate Details and Workings of our Living Ecosystem;

Creating a Balance

- Communication between Partners (Monthly Meetings)
- Communication within each Pillar (Monthly Meetings)
- Permanent Project Impacts
- Sustainability of the Project
- Project Website and Logo
- Committed Project Personnel/Trainings/Team Building

STEM + C “Integrating Environmental Restoration with Computer Science in New York Harbor with New York City Public Schools” BOP CCERS Phase III

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The STEM Collaboratory NYC®
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