

20  
22

# SUMMER INSTITUTES

**CELF SUMMER INSTITUTES RECAP + IMPACT REPORT**  
JUNE-JULY 2022

Houston, Buffalo, Ghana & Virtual-Global



Children's  
Environmental  
Literacy  
Foundation

# 2022 Summer Institutes

## Energizing and Innovative Professional Learning for K-12 Educators

In 2022, CELF Summer Institutes focused on giving educators space to reflect and re-energize together with peers. Teachers explored concepts of sustainability that emphasize community well-being as the core to enabling meaningful learning for students.

It was a groundbreaking year as CELF delivered the institutes across modalities and geographies. Teachers in Houston and Buffalo collaborated in person, while a global cohort of Civic Science educators met for two weeks virtually on Zoom. A group of teachers in Ghana combined in-person and virtual experiences for a **global hybrid approach**.

Institutes also extended outdoors with rich field experiences in urban outdoor spaces. The introduction of new community partners further broadened the knowledge and experience drawn upon by institute participants.



*I really like the concept of the place-based learning because I have such diverse students. The idea of bringing them back to the school that they all share and come to every day is so important for them.*

Jennifer, high school science teacher, Florida

### Table of Contents

*This recap provides a look into the wealth of programming and learning experiences at CELF's 2022 Summer Institutes.*

#### **By the Numbers** **Page 3**

*See the broad demographic and geographic diversity of schools reached this summer*

#### **Houston: Student Projects** **Page 4**

*Discover outdoor and lab-based educational experiences on the campus of Lone Star College - Kingwood*

#### **Buffalo: Going for the Green** **Page 8**

*From urban greenspaces to green industries, explore resources available for whole school transformation*

#### **Ghana: Bridging Continents** **Page 11**

*Follow teachers from Ghana as they develop sustainability projects with their students for this global, hybrid program*

#### **Virtual Civic Science** **Page 13**

*Across pathways in air and water quality, biodiversity/gardens and waste, find out what students are looking to research*

#### **Sponsors** **Page 17**



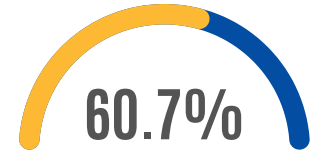
# Summer Institutes Reach and Impact

Administrators, teachers and non-formal educators from all over the U.S. and from Ghana joined us for the 2022 Summer Institutes. These sample figures demonstrate the diversity of perspectives and backgrounds that enriched the experience for all participants.



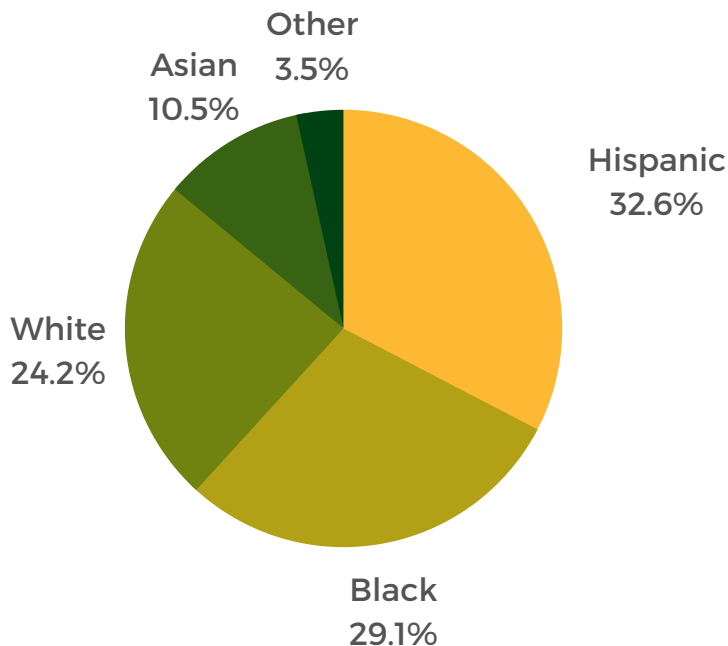
# 13,334

students will interact with summer institute participants in the coming academic year.



60.7%  
of participating U.S. schools were Title 1 eligible

Participating US-based schools represent demographically diverse student populations (nces.org)

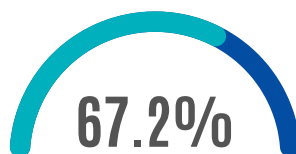
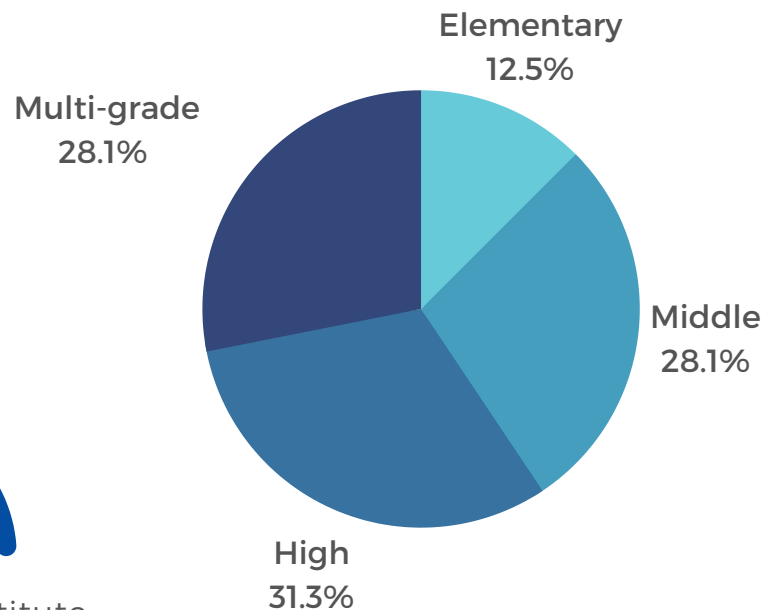


# 64

registered participants including teachers, administrators, and non-formal educators



2022 Summer Institute participants educate all grade levels



67.2%  
of 2022 Summer Institute participants were enrolling in a CELF program for the first time

# Exploring Sustainability through Student Projects in Houston

The CELF Summer Institute at Lone Star College - Kingwood in Houston, Texas, brought together educators and teachers from districts across the state in a three-day professional learning experience to develop student-driven projects incorporating CELF's Big Ideas of Sustainability.

**7** Texas Districts Represented



**RIO GRANDE CITY GRULLA**  
Independent School District



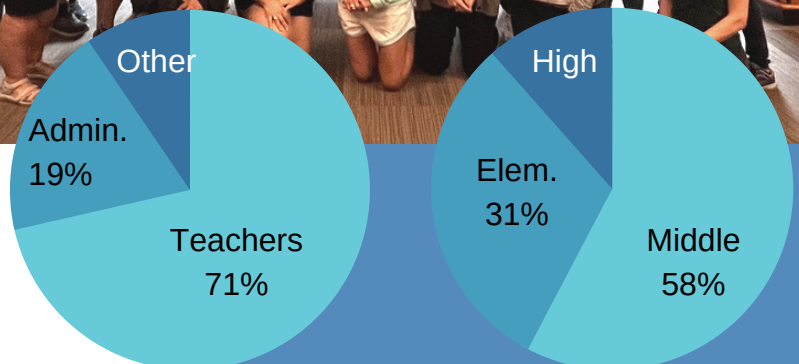
**NEW CANEY ISD**  
A SHINING STAR in TEXAS EDUCATION



**CLEVELAND**  
INDEPENDENT SCHOOL DISTRICT

## Mission

Establishing sustainability as an integral part of every child's K-12 learning experience.



*What I loved about CELF are the collaborations and the learnings of other people, but I also love the resources you guys give us and being able to take those resources and use them. Now, I have the CELF community and I can add that to my bucket.*

Stephanie, middle school science teacher, Texas

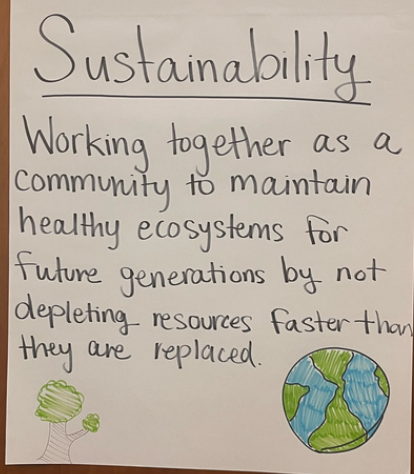


## Educator Project Highlights

Our 3-day teacher workshop delivered impactful learning experiences for our teachers and educators as they developed, collaborated, and shared plans to support student-driven projects throughout the coming school year. Whether through **composting initiatives**, encouraging **water bottle reuse** and **recycling**, **air quality testing**, or a **pollinator garden**, all of these projects will help students discover how they can be a part of bringing a sustainable future to their schools and communities.

### Learning From Each Other

Some Houston Summer Institute participants had previously completed a CELF program. These returning teachers and administrators shared their experiences engaging students in sustainability projects, and offered valuable guidance to other educators who were defining a “driving question” for the first time. Program speakers (field experts and academics) helped further refine the projects to encourage students to make meaningful connections around their campus.



### We Asked Teachers “What does sustainability mean to YOU?”

Their responses reflected profound and authentic connections that can inspire students to care for the environment.

*We have many ideas on how we can integrate sustainability into our classrooms and communities, and make our ideas more concise when we are working with campuses. CELF has helped us visualize how that's going to look.*

Michelle, district administrator, Texas



## Teacher Outdoor Experiences

Educators' outdoor learning experience took place at Jesse H. Jones Park & Nature Center and at Lone Star College - Kingwood's Nature Walk. Participants partook in outdoor activities designed to illustrate the interdependence of their environment and ecosystems. Teachers will be able to recreate these activities to engage students in observation, data collection, and sharing findings with their communities.

### CELF in the Field at Jesse Jones Park

Park Naturalists guided educators on a tour around the park to inspire participants throughout the developing stages of their student-driven projects. Educators were introduced to CELF's Colors of Place, a systems-thinking activity, in which educators learned how biotic and abiotic factors interact with each other and what lies within their environment.



### Gathering Water Quality Data with Professor Shmaefsky

Dr. Shmaefsky, Professor of Environmental Science, shared scientific tools available to teachers so they can support students in the process of collecting data and analyzing the quality of water, soil, air and other environmental variables. Together the group gathered water samples from the campus marsh, then returned to the lab to analyze what they found under the microscope.





## Houston Speakers

### DR. RYAN CHABARRIA

Interim Dean for the Department of Health Occupations and Biological Sciences  
Lone Star College - Kingwood

### DR. BRIAN SHMAEFSKY

Professor of Environmental Science  
Lone Star College - Kingwood

### ALAICIA MEIN - JOHNSON

Naturalist  
Jesse Jones Park and Nature Center

### KEN WILLIAMS

Chief Executive Officer  
GROW: Green Resources & Opportunities Workforce



## Houston Teacher Presenters

### AMANDA BRANN

Science Teacher, Humble Middle School

### MICHAEL ARRATIA

Science Teacher, Lewis Middle School

### CYNTHIA ALANIZ

Science Teacher, Rio Grande City High School

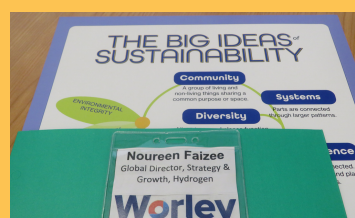
### STEPHANIE HURST

Science Teacher, Cleveland Middle School

### MICHELLE AYERS

Science Teacher, Blanson Career and Technical Education High School

## Houston Program Partners & Supporters



# Going for the Green

## Sustainable Schools at the Kenmore-Tonawanda School District



For two days in the Buffalo region, CELf hosted an in-person summer institute focused on **Education for Sustainability** and **Whole School Transformation** with the teachers, administrators, and staff of the Kenmore-Tonawanda School District (commonly shortened to Ken-Ton). With 6,560 students, Ken-Ton is the third largest district in Western New York State. Diversifying perspectives, the Ken-Ton team was joined by representatives from Erie 1 BOCES (a regional hub for Career and Technical Education), two non-district schools, and a county legislator.

Participants learned how to integrate CELf's Big Ideas of Sustainability into lessons and activities and to engage in transdisciplinary systems thinking. Collaborating with district administrators, facilities management and food service, they broadened their vision to include campus green space preservation, cafeteria food waste and much more, on the road to establishing school action plans and achieving the U.S. Department of Education's National Green Ribbon recognition.

**Outdoor field experiences** to the Niagara River Greenway and Casella Waste with **access to expert speakers** further consolidated the group's shared commitment to sustainability in the district and the broader Buffalo region.



The U.S. Department of Education **Green Ribbon Schools** is a public engagement initiative for school sustainability that is structured as a federal recognition award. It celebrates accomplishments by schools and districts with cost-saving, health promoting, and performance-enhancing sustainability practices. In addition to Ken-Ton, **CELf's Whole School Transformation Program** has coached six schools in three districts on their journeys toward this national recognition.



# Greenspaces and Green Economy

## Discovering the Niagara River Greenway

The Niagara River Greenway has a mission to restore the ecological health of the Niagara River and improve public access for all. The Ken-Ton school district has partnered with the Greenway. On a field trip to the site, Greenway staff, CELF and institute participants explored ways to develop student community-based learning opportunities, to encourage students learning to be civic advocates for the local environment, and overall to promote environmental sustainability in Western New York.



## Tying Combustion Science to Renewable Energy

Brad Damstedt, a Senior Technology Expert in Combustion R&D at Linde PLC, demonstrated the impact of sound waves on combustion rates. He tied his visually exciting demonstration to the development of technology enabling the future production of sustainable aviation fuel from renewable sources.

## Local Waste Management and Wind Power Industries

During the institute, a tour by educators of Casella Waste Systems explored waste recovery and included a visit to view the inner workings of a wind turbine on its grounds. Discussion helped elucidate green business opportunities in Western New York.



## Community Speakers

### BRAD DAMSTEDT

Senior Technology Expert in Combustion  
R&D, Linde PLC

### MICHELLE LOCKETT

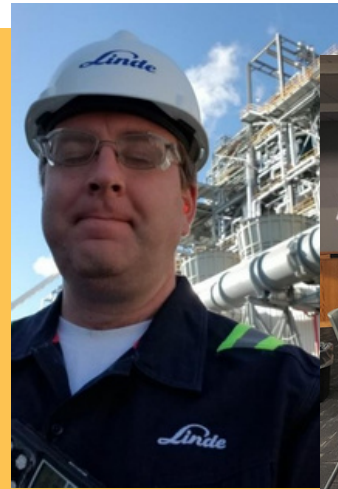
Community Engagement Manager  
Niagara River Greenway

### JOHN HANNON

Recycle Consultant  
Casella Waste Systems

### JAY BURNEY

Special Projects Director  
Pollinator Conservation Association



Making our world  
more productive



*I want to talk a bit about 'sustainability' and how much I appreciate that your work with CELF is focused on this: in particular the links between environment, economy, and social justice which, as you know, are the foundations of sustainability.*

Jay Burney, Pollinator Conservation Assoc., Buffalo, NY

## Ken-Ton Presenters

### LISA CROSS

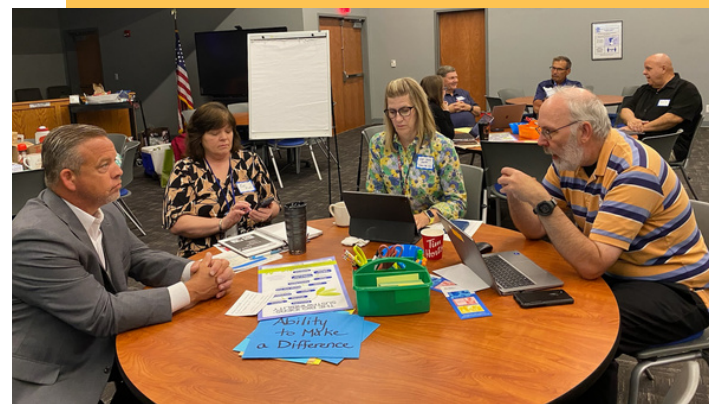
Director of Secondary Education

### KIM ROLL

Food Service Director

### JOHN WILLE

Assistant Director of Facilities  
Buildings and Grounds

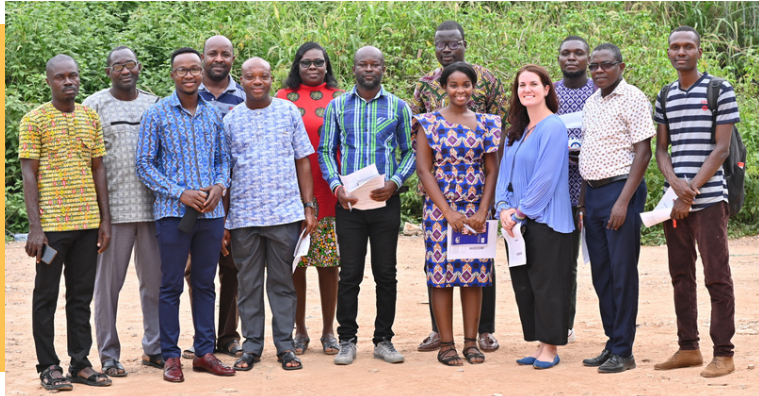


## Buffalo Program Partners





## Bridging Continents to Reduce Waste Civic Science in Ghana



Teachers from two girls schools in Ghana's Eastern Region were immersed in CELF's Civic Science program during an in-person workshop in Accra followed by online participation in CELF's Virtual Civic Science Summer Institute. This cohort of educators and their students will continue to take part in CELF's professional learning and student engagement programs during the academic year.

Through a partnership with Tricon, CELF is supporting educators and student civic scientists in Ghana and the US as they use evidence to promote zero waste strategies and the circular economy in their schools and communities. Cross-pollination between the Ghanaian educators and their US-based peers led to innovative student project ideas around **air quality monitoring**, **water quality testing**, and **soil remediation**. Looking ahead to the Spring 2023 CELF Student Symposium, these students will be able to join peers from around the globe to share and present their projects in a virtual interactive setting.

*I've been passing here all these years, but...if not because of this program...I would never have become conscious of it...After coming to observe the place where kitchen liquid waste was draining onto the land...that is what motivated the students to come up with ideas to solve this problem. One said data must be collected...Another mentioned Filtration experiments so that we can get fine water that can even serve as a source of irrigation for pineapple cultivation.*

Stephen, high school geography teacher, Ghana

## Guest Speaker

**NANA MINTA ASIEDU**

Education and Eco-Clubs Coordinator  
Green Africa Youth Organization (GAYO)



## Ghana Program Partners

**YOUTH AND WOMEN  
EMPOWERMENT (YOWE)**

**GREEN AFRICA YOUTH  
ORGANIZATION (GAYO)**



*I liked getting the project plan because I think it will help a lot. We discussed a few projects that can involve engaging the students in cleaning the environment. We teach in a girls school and I think we have quite a clear problem that we can look at."*

Michael, high school geography teacher, Ghana





# Engaging Students in Civic Science and Action

## Global Virtual Institute

CELF's virtual Civic Science institute brought together educators from six states who were joined in its the second week by a cohort of teachers from Ghana. The US-based participants were evenly split between those who were new to CELF's [Civic Science Inquiry to Action framework](#) and educators returning to deepen their knowledge and further develop [multi-year student projects](#).

Civic Science projects engage students in learning through inquiry, place and action. Over the course of two weeks, pathways to topics such as [water](#), [biodiversity](#), [air](#) and [waste](#) were all explored with field experts from industry alongside experienced education practitioners. All attendees walked away with an Inquiry to Action project planner ready to implement in the fall of 2022.

The journeys started at Civic Science summer institute will [extend to the entire academic year](#), as participants will continue to receive technical and pedagogical support from CELF.



United States of America

Ghana

Educators from

6 U.S. States &  
2 Countries

## Planned Student Projects Cover Many Aspects of Environmental and Community Health

The virtual Civic Science institute addressed four different project pathways: Air Quality, Water Quality, Biodiversity/Soil and Waste. For each pathway, program participants had access to professional field experts, as well as peers with direct student project experience. Their students will have the opportunity to present project research and impacts at the **CELF Student Symposium in spring 2023**. This section highlights a handful of the exciting projects underway.

### Air Quality Pathway

#### Field Expert

#### TYLER KNOWLTON

Director of Communications  
Plume Labs

#### Teacher Presenter

#### PATRICIA KULOW

Middle School Science Teacher  
Harmony School of Fine Arts & Tech.  
Houston, TX



#### Project: Testing Air Quality in the Bronx and in Student Neighborhoods

Matthew, High School Science Teacher, Bronx, New York

Students will measure air quality issues in the Bronx and identify ways to raise awareness and spur action to address them.

Big Ideas of Sustainability in this project:



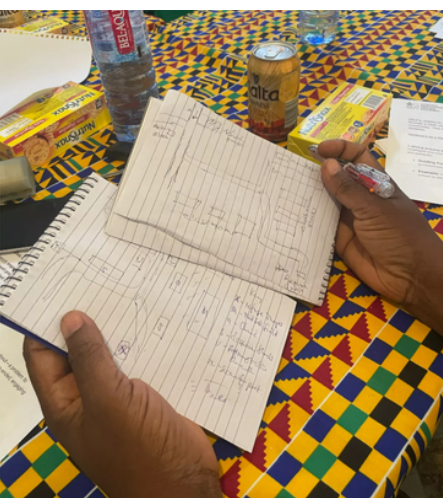
FAIRNESS/EQUITY



PLACE



ABILITY TO MAKE A DIFFERENCE



#### Project: Alternatives to Burning Waste to Improve Air Quality

Michael, High School Geography Teacher, Accra, Ghana

Students will explore air quality issues related to the burning of waste. Based on findings and research, they will advocate for cleaner disposal methods.

Big Ideas of Sustainability in this project:



LIMITS



CYCLES



COMMUNITY



## Biodiversity Pathway

### Teacher Presenter

**ALLISON SILVERMAN**

Middle School Family and Consumer Science Teacher  
Port Chester, NY



### Project: Identify, Fortify and Protect Native Plants on Local Trails

Carmen, Elementary Teacher  
White Plains, New York

Students become more aware of local environment by identifying native trees and how native flora affects us and how we affect native flora .

Big Ideas of Sustainability  
in this project:



DIVERSITY



INTERDEPENDENCE



LONG-TERM EFFECTS



### Project: Introduce Aquaponics to Grow Vegetables

Annmarie, Middle School  
STEM Teacher, Houston, Texas

The first year goal is to get the aquaponics lab up and running with a healthy fish tank and test plant., while learning about the dynamic related systems. The ultimate goal is to grow food.

Big Ideas of Sustainability  
in this project:



SYSTEMS



EQUILIBRIUM



COMMUNITY

## Water Pathway

### Field Experts

**ELIZABETH VIRGL**

Texas Coastal Education Specialist  
American Bird Conservancy  
Houston, TX

**LAURIE SEEMAN**

Founder/Director and Lead Artist  
Strawtown Art & Garden Studio  
Nyack, NY



## Project: Gray Water Strategy for Irrigation and Food Cultivation

Stephen, High School Geography Teacher, Accra, Ghana

Big Ideas of Sustainability in this project:

Explore ways to treat waste water draining from the school kitchen as a source of irrigation for crop cultivation.



CHANGE OVER TIME



CYCLES



PLACE

## Waste Pathway

### Field Expert

#### ERIC ASCALON

Director of Community Relations and Strategic Partnerships  
Terracycle



## Project: "Waste to Wealth" Recycling in Baltimore

Pauline, Science Teacher  
Baltimore, Maryland

The school's Green Team slogan is "Waste to Wealth." Club members explore ways to reduce and re-use material to grasp how individual and collective action can help the environment.

Big Ideas of Sustainability in this project:



ABILITY TO MAKE A DIFFERENCE



LONG-TERM EFFECTS



COMMUNITY

## Student Panel

Four high school students presented their Civic Science projects at the Summer Institute. They offered examples of successful student-driven projects. Watch [video](#)!

### Luke C., 12th grade, NY

"Impact to Biodiversity of Restoring Oysters to the Hudson River Estuary"

### Jaysa M., 12th grade, CT

"Young Voices for the Planet: Civic Engagement and Democracy Program"

### Ashley J., 9th grade, CT

"Bringing Action with Bioplastics"

### Rahul V., 11th grade, TX

"Hydroponics - A Green Future"



## Keynote Speaker

**ELIZABETH CARLSON**

Chief Sustainability Officer  
Tricon Energy



## Program Partners



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