

CASE STUDY

Career Readiness through Civic Science

Civic and workforce readiness skills with Career and Technical Education high school students along the Port of Houston Ship Channel





In the academic year 2022-23, CELF engaged nearly 500 Texas students in the Civic Science: Inquiry-to-Action program, contributing to the development of work-readiness skills, including critical and systems thinking, data collection and analysis, teamwork, and public speaking. This Civic Science skill development was complemented by exposure to Green Career pathways through CELF's Speaker series throughout the school year. The Houston Ship Channel served as a student experience to learn more about the local economy while capturing air quality data for student-driven projects. Later in the academic year, students presented their community-based projects to industry professionals at CELF's Student Symposium hosted by EDPR at Hess Tower.

BACKGROUND

The Children's Environmental Literacy Foundation (CELF), established in 2003, aims to integrate sustainability into K-12 education for every child to cultivate a healthy and equitable future. CELF equips educators with pedagogical tools and sustainability and systems thinking mindsets to empower students as agents of change to identify environmental concerns and design data collection processes to inform data-driven solutions and advocate to key stakeholders and decision-makers.

In addition to promoting environmental stewardship, CELF aims to equip high school students with workforce readiness skills through Civic Science student action projects. The program provides educators with the tools, knowledge, and guidance to ignite a passion for sustainability and environmental stewardship in their students. This includes multi-day Summer Institutes for educators, school-wide professional development workshops, custom curriculum, instruction-consulting projects, and speaker series with green career experts.

CELf was founded based on the vision of a society of global citizens with a deep understanding of the dynamic interdependencies between human and natural systems, and the critical role education plays in cultivating a healthy and equitable future.

"Here in Channelview ISD, our students have very limited opportunities to explore the world at large. Their own personal ecosystems are so small. Therefore, the CELf Civic Science Program gave our students a view into the larger world and its challenges. Furthermore, they have learned not only about the problems we face as a global society within the scope of environmental concerns and injustice, they have also had the opportunity to create solutions to those problems."

Christy Irvin

Science Curriculum Coordinator and
STEM Innovator
Channelview ISD
Channelview, TX

CELf maintains ongoing communication with teachers to monitor the progress of student action projects, which aim to implement the solutions identified in their Civic Science projects. To document successes, CELf develops case studies and disseminates highlights and best practices of student action and advocacy through our communication and social media channels. CELf's approach aims to establish a sustainable, systemic change in Houston's school culture and communities for the long term.

CIVIC SCIENCE: INQUIRY TO ACTION FRAMEWORK



STEP 1 | INQUIRY



STEP 2 | DATA COLLECTION



STEP 3 | ANALYSIS



STEP 4 | COLLABORATION



STEP 5 | INNOVATION



STEP 6 | ACTION



Year one of Career Readiness through Civic Science

CELf engaged educators from middle and high schools to participate in their Civic Science: Inquiry-to-Action program during the 2022/2023 academic year, which aimed to develop students' workforce readiness skills. The program involved identifying and solving environmental challenges to air and water quality in their school communities. The educators were from schools serving Environmental Justice populations near the Port of Houston, with a focus on those with CTE programs.

One of the districts identified for its strong focus on CTE, and proximity to the Port of Houston Ship Channel and its numerous industrial facilities, was Channelview Independent School District.

"Channelview CTE classes such as Engineering and Problem Solving often seek to address problems that are prevalent in the North Channel Area which includes Channelview, North Shore, and Baytown. We seek to give students ownership of tasks which are abundantly relevant to their own lives. This helps students' awareness of community health to grow exponentially."

Christy Irvin



Through the program, educators developed project plans to engage students in using GIS tools to map their communities and analyze environmental indicators like air quality. CELf connected the students with Green Careers professionals and facilitated field trips to nearby parks and natural areas to collect data. The program culminated in CELf's Spring Student Symposium, where students shared their research findings and proposed solutions in front of a panel of experts and decision-makers. The program developed critical and systems thinking, data collection and analysis, teamwork, public speaking, and presentation skills in students.



Year One of Career Readiness through Civic Science

CELf leveraged existing partnerships to provide in-kind air quality monitoring devices and recruit participants in the Green Careers component of the program. The program contributed to the development of students' workforce readiness skills, exposure to Green Career pathways, and environmental stewardship. The Civic Science: Inquiry-to-Action program engaged students in hands-on learning activities that enable them to identify, analyze, and solve real-world environmental challenges – specifically air quality – within their communities around the Port of Houston.



The project engaged 5 educators from 4 schools and 3 districts. These teachers guided students through the Civic Science framework to prepare for the Student Symposium – the culminating event of the Civic Science program. CELf's Student Symposium brings young civic scientists together to share their research projects, data, and solutions with community members, field experts, policymakers, and peers being the primary audiences.

CELf Texas held its first in-person Student Symposium event where students in the Civic Science program presented place-based action projects - which was hosted by EDP Renewables at Hess Tower in downtown Houston. The represented schools and districts in the project include Channelview High School and Endeavor High School in Channelview Independent School District, Pasadena High School in Pasadena Independent School District, Rio Grande High School in Rio Grande City CISD, and Lewis Middle School in Aldine Independent School District.



SYMPOSIUM PARTNERS & SPONSORS



Preparing for Year Two of Civic Science

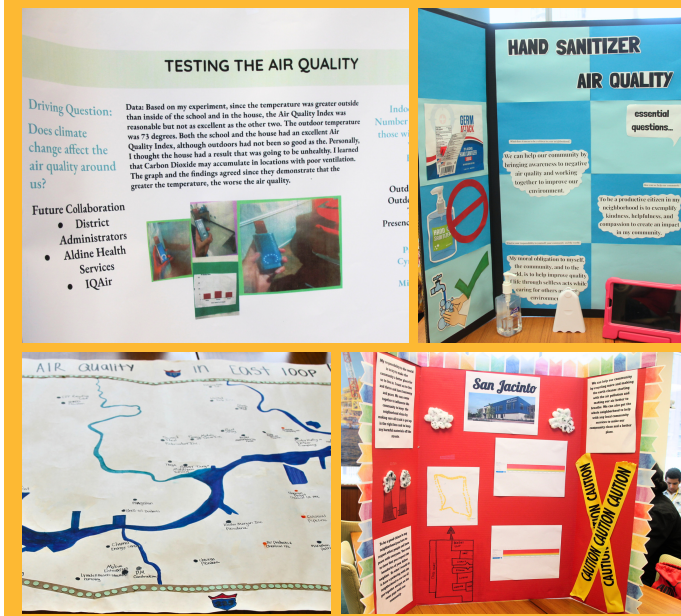
Carrying the relationships and partnerships established during the first year, CELF will focus on scaling student projects from the previous year to explore air quality, waste audits, water quality, biodiversity (including phytoremediation), infrastructure, energy, and transportation pathways throughout the greater Houston area.

Continuing to glean from the Civic Science Inquiry to Action framework referenced earlier, students will apply their training in scientific research, data analysis, and public engagement to capture data to eventually communicate their findings with other students and teachers throughout the nation - specifically focusing on Texas, New York, California, Pennsylvania, Tennessee, and West Virginia.

During year two, CELF will facilitate Student Exchange opportunities on a national and international stage - with potential connections with Ghanaian classes. These Student Exchanges are a collaborative component to project development that promotes global awareness and cross-cultural understanding for a more well-rounded student.

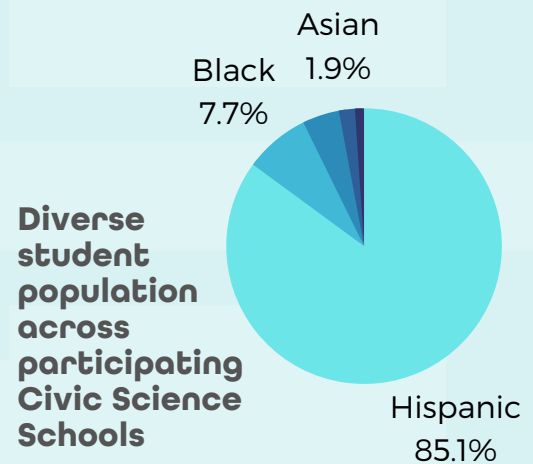
CELF will continue to provide year-round teacher support including virtual sessions focusing on community mapping, data analysis, and digital storytelling along with monetary support in the form of project microgrants and teacher stipends upon program completion.

To foster career readiness skills, students will have the opportunity to work alongside scientists, engineers, and other professionals to gain insight into potential career paths and the skills required to succeed in fields related to their project foci.



750+

Middle & High School Students Engaged in CELF's Civic Science Programming



100%

Title 1 Schools in this Civic Science cohort