

ABI KAMBANIS

AUGUST, 2023



WE ALL CAN IMPROVE

# CLIMATE

## EDUCATION



HIGH SCHOOL CHEMISTRY, COSMIC EVOLUTION & ASTRONOMY TEACHER  
CENTER FOR GLOBAL STUDIES, A MAGNET SCHOOL IN NORWALK, CONNECTICUT

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# PURPOSE



## WHY ARE WE HERE?

We care deeply about the Earth and all of those who are living in it. Thank you for attending TCI's annual teacher retreat! Hopefully, you're feeling inspired to improve climate education and empower your students to take action to protect their world.



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# CENTER FOR GLOBAL STUDIES

We empower students to bridge and embrace the international and cultural differences they will encounter in our increasingly global society. Students study either Japanese, Arabic, or Chinese and graduate with a sense of global awareness.

## —• OUR STUDENTS

277 students from 14 districts in Fairfield County, Connecticut. A third are eligible for free lunch

## —• SISTER SCHOOLS

We have twelve sister schools in Japan, China, Taiwan, Malaysia, Qatar, Morocco, and Egypt





## EDUCATE

A series of lessons covering the necessary background knowledge for all of your students to access the learning lab, including key definitions and any necessary skills needed for the lab.



## EMPOWER

Give your students opportunities to see their local landscapes through a new lens and seek out ecological knowledge from their community. This gives students agency.



## ACTIVATE

Engage your students in a community action project that raises awareness of the local impacts of the climate crisis and builds community understanding of the issue in an effective way.

# TWO APPROACHES



## ONE: EN-ROADS

COSMIC EVOLUTION  
TWO CLASSES  
36 STUDENTS  
A DIRECT APPROACH



## TWO: SEA LEVEL RISE

CHEMISTRY  
THREE CLASSES  
60 STUDENTS  
AN INTEGRATED APPROACH



## TWO: EN-ROADS





**Senator Bob Duff, Majority Leader, Con...** @senat... · Oct 16, 2022 ...

Thanks to the students at [@brienmcmahon\\_hs](#) for inviting me along with [@MayorRilling](#) and State Rep. [@lucydathan](#) to your litter cleanup at Veterans Park in Norwalk. Glad there were so many hands to grab the litter and fill the bags, though I always wish these weren't necessary.



Mayor Harry Rilling and Norwalk, CT

# A DIRECT APPROACH

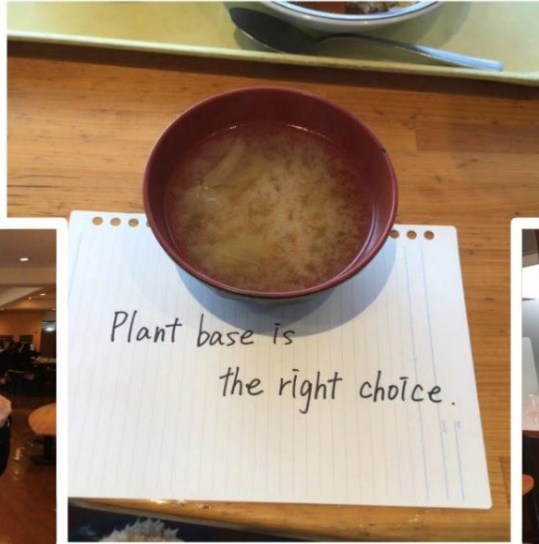
## LEARNING LAB

En-Roads lab delivered as designed by TCI with no adaptation in the context of a unit called 'Humanity & Resources'

## ACTION PROJECTS

Students worked in pairs to create eighteen action projects within our local community of Norwalk, CT.

## Help from friends in Japan!





Floating Plan



Evolution Project

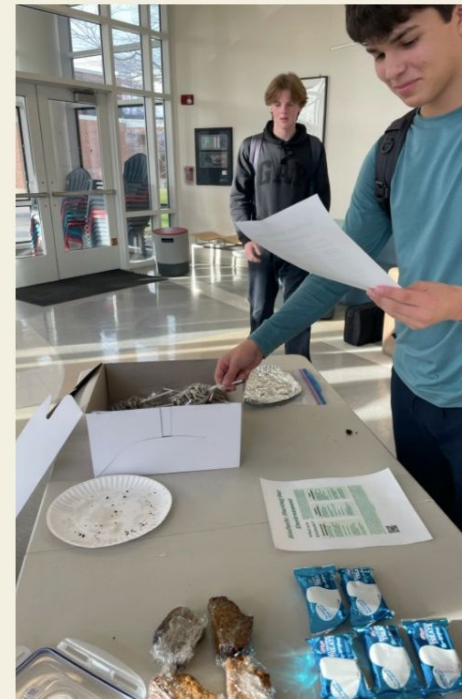
# AN INTEGRATED APPROACH

## LEARNING LABS

Two learning labs each distributed throughout a year of chemistry content and adapted to fit the curriculum.

## ACTION PROJECTS

One sixty-student salt marsh restoration project and fifteen small group action projects.



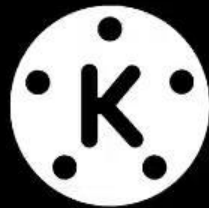


# UNITS OF STUDY

- **PATTERNS & POLLUTION**  
Understanding and Restoring Natural Water Filters
- **BALANCE & INDUSTRIALIZATION**  
How Industrialized Production Impacted the Environment
- **EVIDENCE & EXTINCTION**  
Exploring Sustainability Through Art
- **CONSEQUENCES & CONSERVATION**  
Helping our Communities Protect the Oceans
- **ENERGY & INNOVATION**  
Navigating Climate Negotiations and Solutions



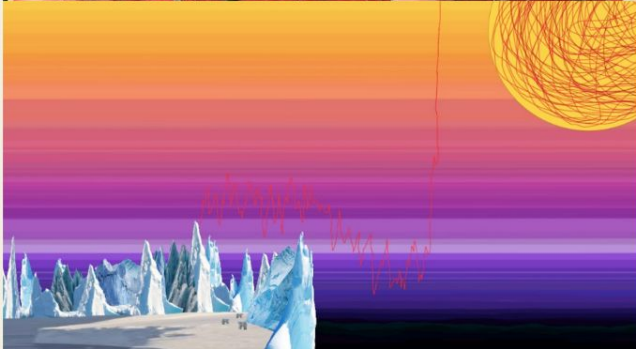
The salt marsh  
and how human activity  
has impacted it



KINEMASTER







# OTHER TCI-INSPIRED PROJECTS



## SCHOOL-WIDE GALLERY WALK

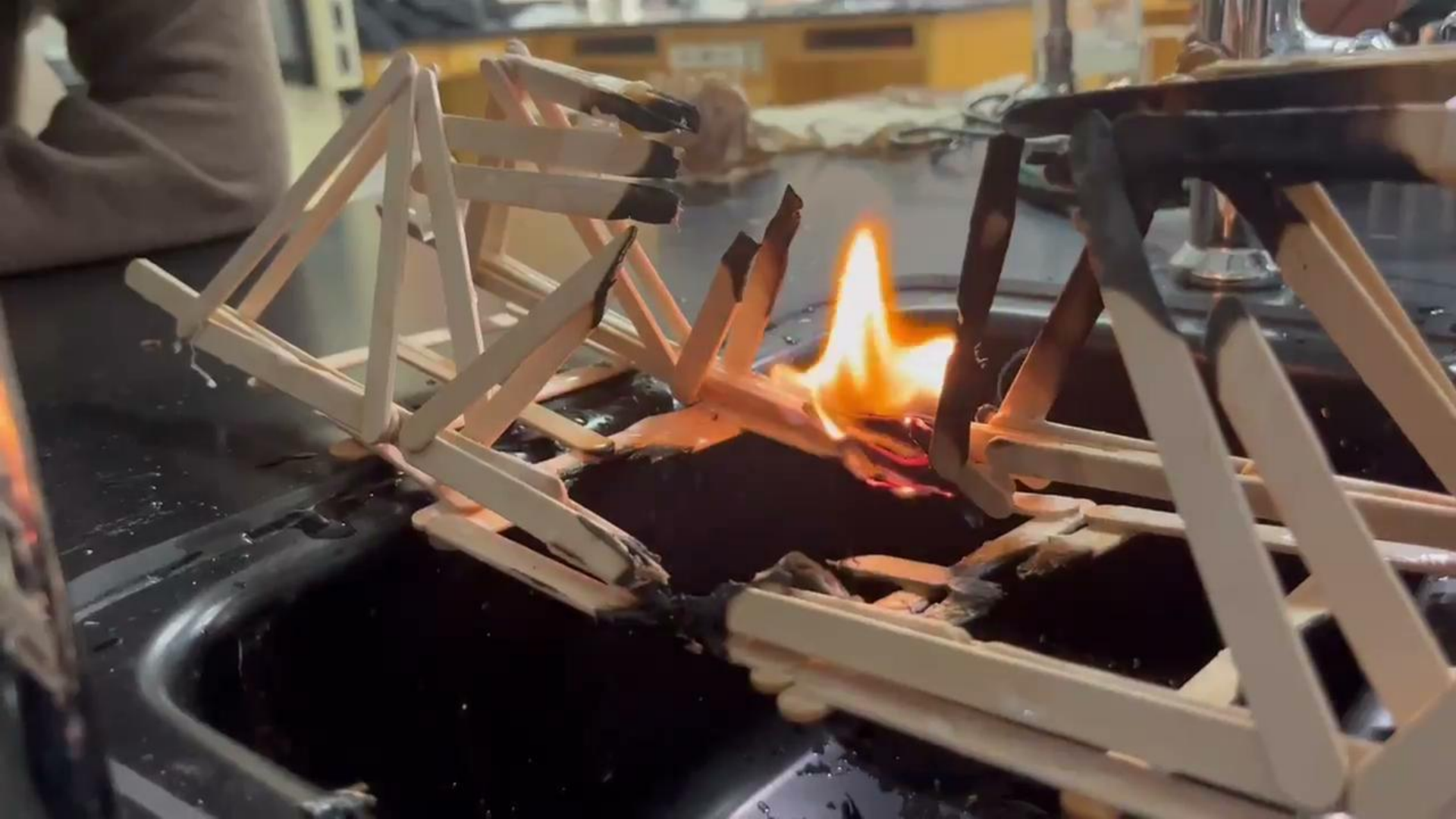
Art to raise awareness within the school community about climate-related issues

## OCEAN ACIDIFICATION CONVO

A community conversation about ocean acidification within the Long Island Sound

## WILDFIRE TIK TOK VIDEOS

A meaningful activity for the last day of school due to the Canadian wildfires







# STUDENT EXPERIENCES

**14%**

improvement in chemistry quiz scores compared to the previous school year without an environmental focus

**76%**

of students said the learning lab(s) challenged them to think in new ways about the subject they were learning to a high extent

**85%**

of students listed a learning lab-related activity as their highlight for the year

**98%**

of students said they feel like they can take action to mitigate the climate crisis in a meaningful way compared to 6% previously

**100%**

of students passed the classes and gained their physical sciences credits

Handwritten text, possibly a name or date, in the top left corner.



Happy teacher appreciation week Ms Kambanis



CHEMISTRY





WHAT WAS THE MOST VALUABLE PART OF THE  
CHEMISTRY CURRICULUM THIS YEAR?

"PROBABLY EITHER THE LABS OR FIELD TRIPS  
WHERE WE WERE ABLE TO APPLY WHAT WE  
LEARNED TO OUR LOCAL ENVIRONMENT"

"GOING TO FARM CREEK AND CLEANING UP  
PHRAGMITES WAS FUN BECAUSE IT LET US  
APPLY CHEMISTRY TO THE REAL WORLD."

"THE ART GALLERY WALK GOT EVERYONE  
INVOLVED AND GAVE US SOME TIME TO  
REFLECT AND LEARN ABOUT DIFFERENT  
ENVIRONMENTAL ISSUES."

"THE OCEAN ACIDIFICATION COMMUNITY  
CONVERSATION BROUGHT DIFFERENT PEOPLE  
TOGETHER AND MADE ME REALIZE HOW MUCH  
WE AS PEOPLE DAMAGE OUR WATERS. "





Thank you, MS, nurses!

# BENEFITS OF A DIRECT APPROACH TO LEARNING LABS

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## Accessibility



My academically weakest chemistry class out-performed the other chemistry classes when it came to learning labs because they were actively engaged

## Ambition



No content distractions led to the most ambitious student-led action projects, including picking up over 180 lbs of trash and repurposing some

## Variety



Eighteen distinct action projects evolved as student pairs were inspired in different ways as a result of the variety of topics in the 'Educate' lessons



# AN INTEGRATED APPROACH

## CONSISTENCY



A CONTINUATION OF KEY CONCEPTS, SUCH AS THE THREE LENSES GAVE STUDENTS A CONFIDENCE TO APPLY FAMILIAR CONCEPTS TO NEW SCENARIOS

## COLLABORATION



A YEAR OF PURPOSE BROUGHT THE CLASSES TOGETHER AS ONE BIG TEAM. COLLABORATION WITH COMMUNITY ORGANIZATIONS WAS INVALUABLE

## LARGE-SCALE



INTEGRATION INTO THE CURRICULUM MEANT MORE TIME COULD BE SPENT ON CREATING A LARGE GROUP ACTION PROJECT AT THE SALT MARSH WITH THE NLT

Disclaimer: an integrated approach requires more effort than a direct approach



# SHARE YOUR WORK



Keep TCI updated



Encourage your colleagues



Upload your story of change



Inspire your community

