

Bay to Schools

Building Bridges Between Formal and Nonformal Education



Cindy Wilems

Director of Education, Galveston Bay Foundation

- 14 years of classroom experience teaching biology & aquatic science
- Curriculum writer & Department Head
- Joined GBF in 2017
- Texas Association for Environmental Education Vice President



GALVESTON BAY
FOUNDATION



Environmental STEM Education

INSTILL

knowledge and appreciation of the
Galveston Bay ecosystem

INSPIRE

participants to break down barriers and
open themselves to new experiences

EMPOWER

students to become life-long advocates
for a resilient Galveston Bay



To learn more: www.galvbay.org/education



GALVESTON BAY
FOUNDATION

Education Programs

- ✓ Place-Based Field Programs
- ✓ Service-Learning Programs
- ✓ Classroom Programs
- ✓ Teens 4 the Bay Science Communication Program
- ✓ Teacher Professional Development
- ✓ Free Curriculum & Resources
- ✓ VWET virtual laboratory tours/curriculum (with TAMUG & NOAA)

2024 Statistics

286
programs

15,018
students

1,021
teachers

18,104
impressions



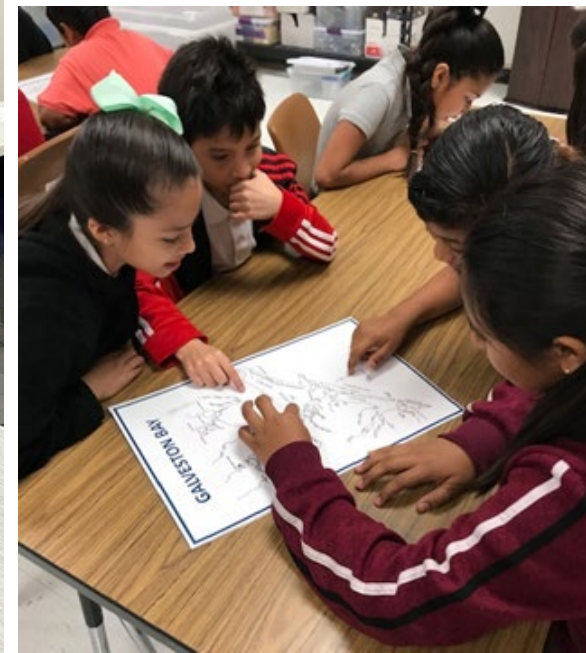
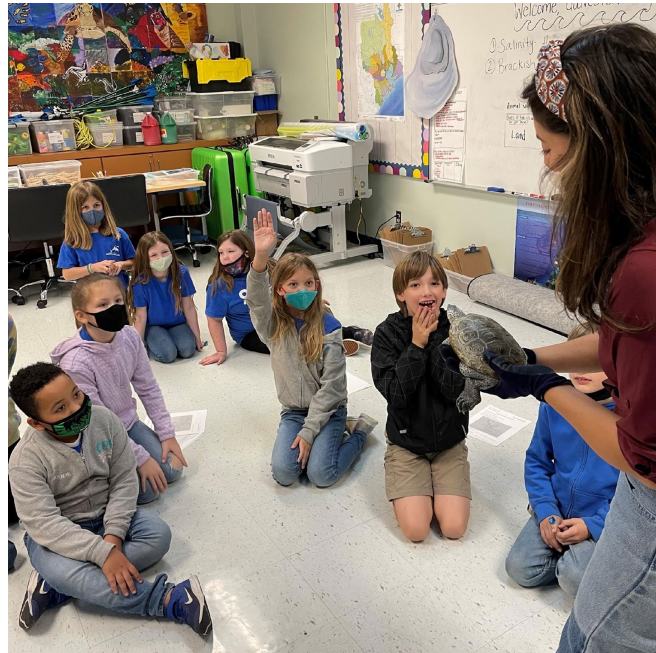
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GALVESTON BAY
FOUNDATION

Bay 2 Schools Classroom STEM Workshops

Bringing the Bay to classrooms across the Houston region



Why??

Student engagement with experts

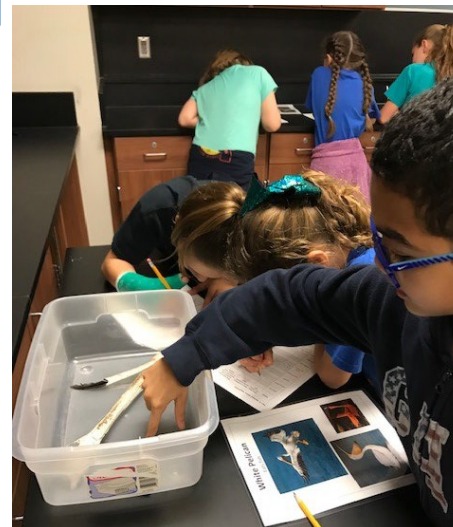
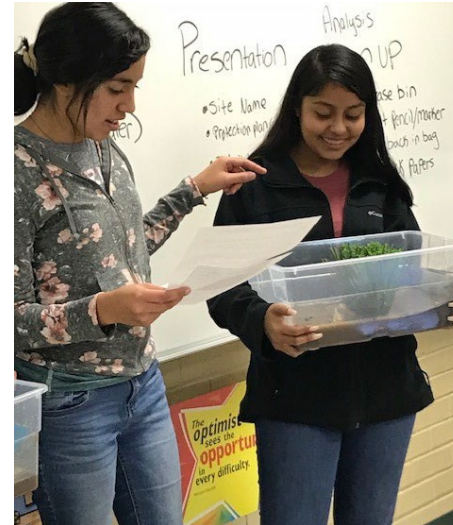
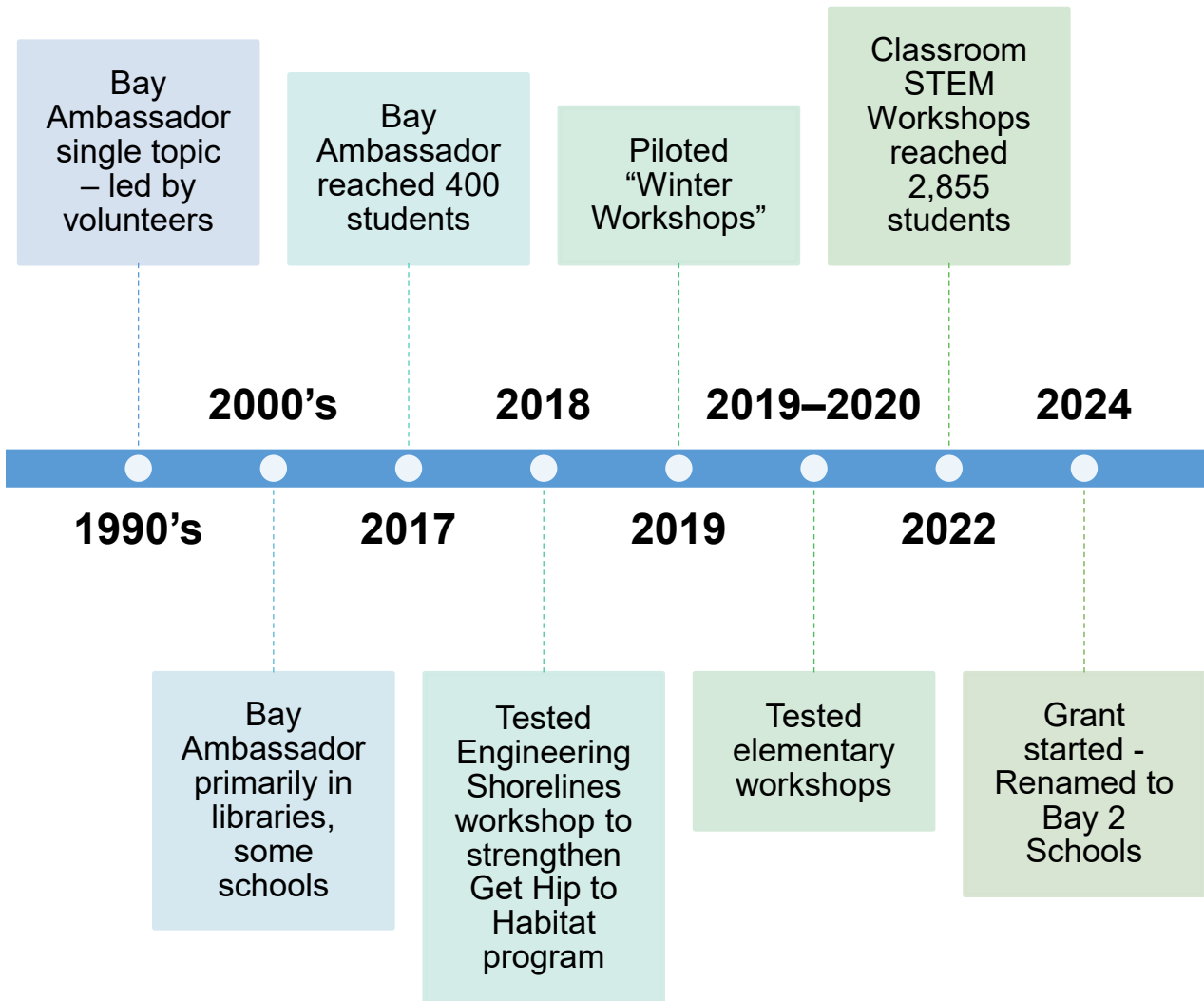
Increase teacher knowledge

Not all students can get to the bay

Builds relationships with schools

Lack of funding

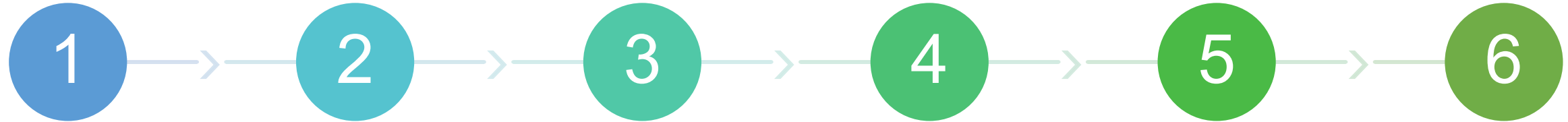
The History & Need



The Grant Goals



The Grant Plan



Update
classroom
workshop
lessons &
materials

Create video
lessons for
internal staff
training

Hire two 6-
month interns
Student
Conservation
Association
interns

Implement,
promote,
analyze
teacher
evaluations

Implement
teacher
professional
development
opportunities

Dr. Waters,
UHCL, write
literature;
GBF & UHCL
present

GALVESTON BAY FOUNDATION ANIMAL ADAPTATIONS CLASSROOM STEM WORKSHOP

Grade Levels: 5-8th grade

Objectives

- Students will discuss features of the Galveston Bay habitat to identify the adaptations of organisms that live there.
- Students will collect qualitative data of six bay organisms by observing and drawing models and identifying text evidence of animal adaptations from informational text.
- Students will recognize connections between the organisms and draw conclusions about the adaptations that are required for living in Galveston Bay.

Details

- 45 minutes – 1 hour long
- Up to 35 students at a time
- We can implement multiple workshops throughout the day (with 10-15 minutes between workshops to reset materials).
- GBF educators will provide all materials for the workshop, including:
 - Models and specimens of six bay organisms (Roseate spoonbill, bottlenose dolphin, Bull shark, Diamondback terrapin, River otter, Southern flounder)
 - Informational texts and photos of organisms
 - Galveston Bay maps

*A worksheet will be emailed for you to print copies for each of your students. Students will complete the worksheet during the workshop to turn in to you.

Key Vocabulary

- | | | |
|---------------------|--------------------|------------------|
| • Habitat | • Adaptation | • Predator |
| • Brackish | • Hypothesis | • Prey |
| • Estuary | • Observations | • Food Web |
| • Wetland | • Qualitative Data | • Camouflage |
| • Freshwater Inflow | • Predator | • Migration |
| • Saltwater Inflow | • Metamorphosis | • Countershading |

TEKS

5: 1ACDEFG.2A.3ABC.5ABDG.12AB.13AB 7: 1ABCEFG.3AB.4C.5FG.11B.13CD.14AB
6: 1ABCEFG.3AB.4C.5FG.11AB.12ABC.13C 8: 1ABCEFG.3AB.4C.5FG.12AC.13C



The Program

| TOPIC | GRADE |
|----------------------------|---------------------|
| Bay Ambassador | K-2 nd |
| Galveston Bay Dolphins | 2-8 th |
| Bay Food Chains | 3-4 th |
| Birds of Texas | 4-6 th |
| Engineering Shorelines | 4-12 th |
| Animal Adaptations | 5-12 th |
| Intro to Wetlands | 6-12 th |
| Watersheds & Human Impacts | 6-12 th |
| All about Oysters | 6-12 th |
| Advanced Oyster Issues | 10-12 th |

FREE!



The Impact:

January 1, 2024 – February 28, 2025

46 Public Schools

21 School Districts

6 Private/Charter

7 Organizations

8,363 Students

216 Teachers

26 Chaperones

107 Program Days

9,122 Student Impressions



The Feedback

GBF are the experts in the field and experienced, as well as passionate about the subject. Additionally, we lack the resources for such lessons.

"My motto for my science and engineering classes is: "It's not what you know in science, it's what you can DO with what you know that is important!" These programs are all about learning more about our bay, the ecosystem, the economics, the impacts that external factors have played to diminish these resources and what we can do with our knowledge to work hard to fix it and make a positive human impact on our world."

"They got to think like a researcher and scientist. Make observations and think critically. These are all aspects of learning that are important. I think that for the Bay the continued focus on the environment is important."

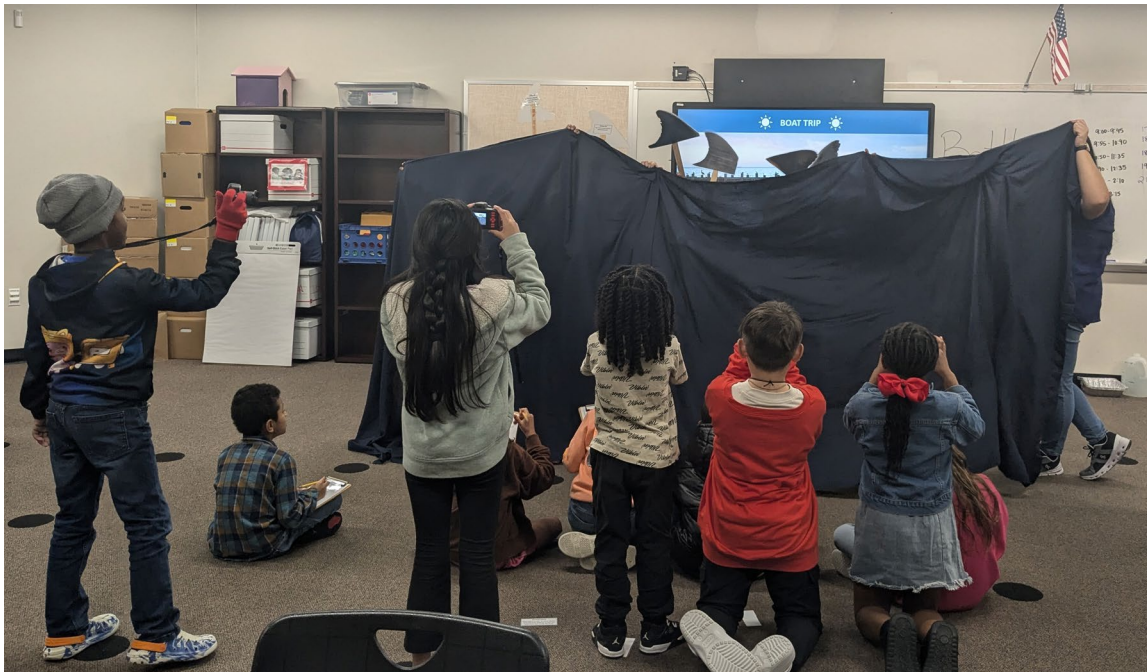


They loved learning and we look forward to more next year!

GBF employees are knowledgeable, reliable, and easy to work with for planning the event. The supplies, knowledge, and hands-on experience coming from the expert versus coming from me is a more memorable experience for my students.

This workshop brings the world to life, in relevant ways. Classes, social media, etc., can provide knowledge, but programs like this effect students in the area of understanding. providing opportunities to grow in wisdom as they interact with the world around.

This presentation completely aligned with what we are covering in class. Students learned about how oysters filter the water in the ocean around them. From there, students used the knowledge they gained from the presentation to develop their own water filtration device. We also learned about how various organisms, like clams, are used to help determine the quality of water in places like Warsaw. We thought this was a great experience for our students and hope to have you all back next year!



The Teacher Workshops

June 2024 @ Trinity Bay Discovery Center: 39 teachers total

- ✓ Bay Aquatic Ecosystems for Elementary
- ✓ Bay Aquatic Ecosystems for Honors
- ✓ Watershed Health

February 2025 @ Clear Creek ISD's District Science Day: 50 teachers total

- ✓ Experience a GBF Classroom STEM Workshop: Animal Adaptations for Honors
- ✓ Experience a GBF Classroom STEM Workshop: Engineering Shorelines
- ✓ Experience a GBF Classroom STEM Workshop: Watersheds and Human Impacts for Intermediate Classes

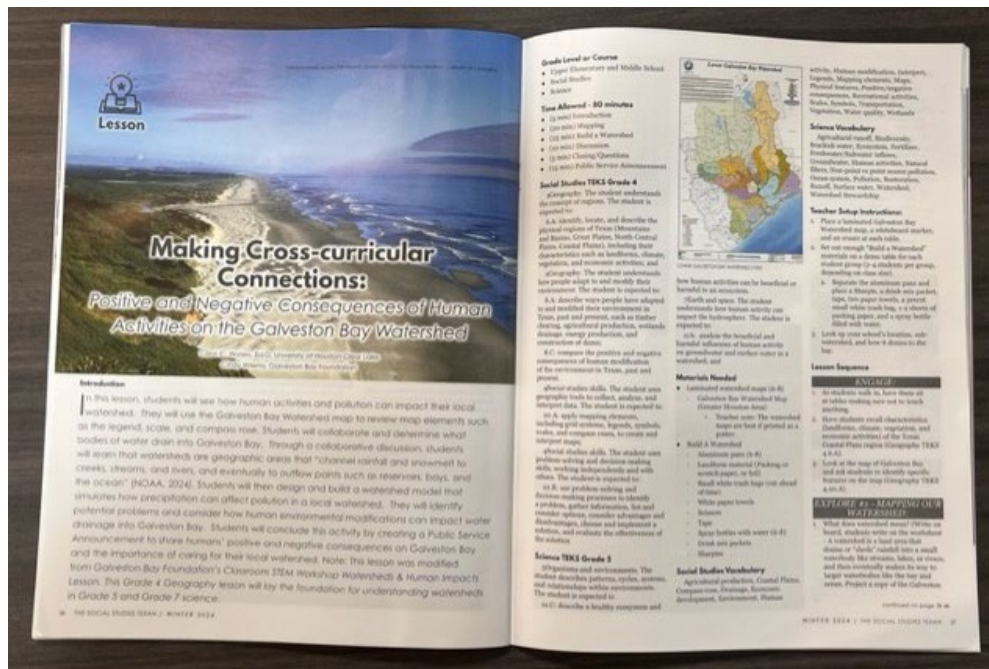
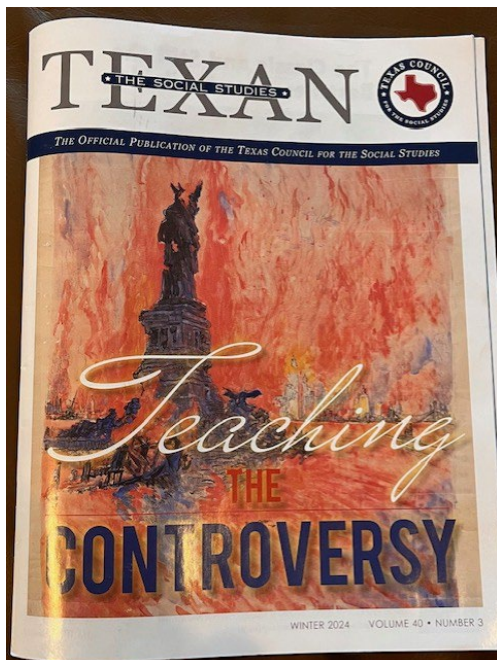


The Literature & Presentations

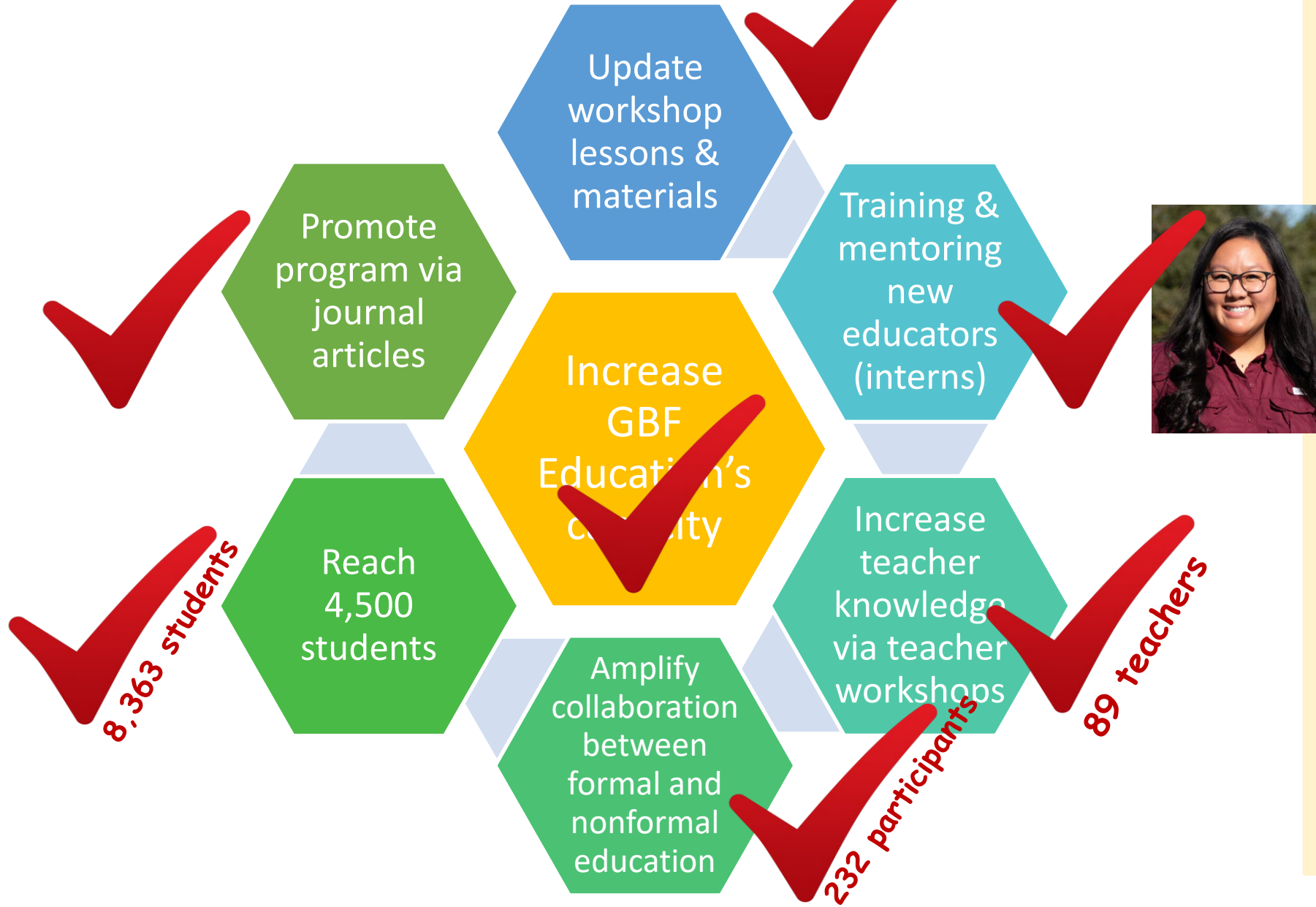
Social Studies Texan: *Making Cross-curricular Connections: Positive and Negative Consequences of Human Activities on the Galveston Bay Watershed.* [Winter 2024 issue online](#) - pages 36-39

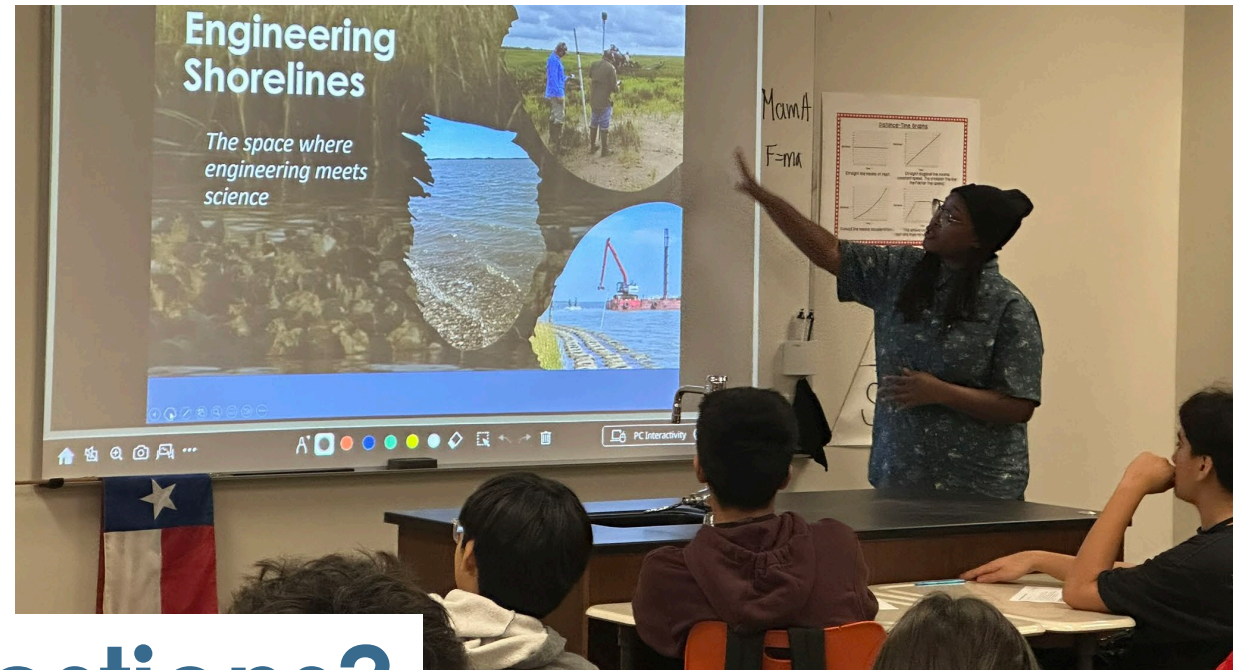
Presentations:

- North American Association for Environmental Education
- UHCL STEM Conference
- Conference for the Advancement of Science Teaching in Texas
- UHCL STEP Lunch & Learn



The Grant Goals - Revisited





Any Questions?

