

CITIZEN SCIENCE, PLASTIC POLLUTION & WATER QUALITY

Creating community through education
programs



#ThinkOutsideTheSink



UNC
INSTITUTE OF
MARINE SCIENCES

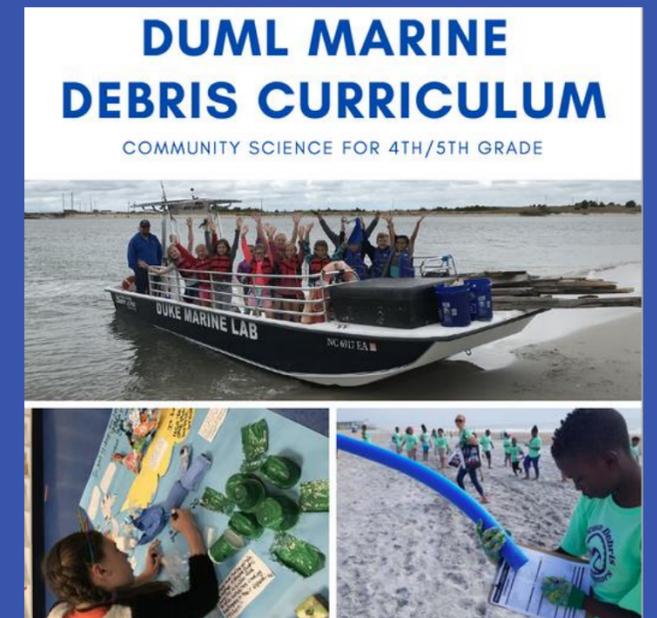
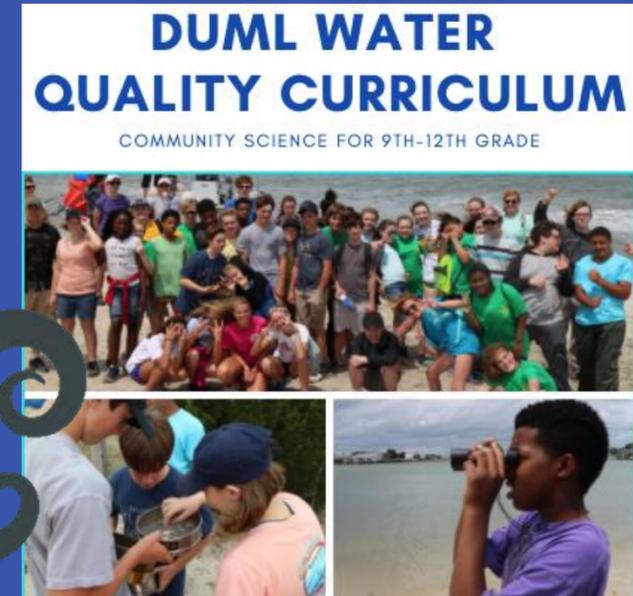




Storm Water
research



Community Literacy
research



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Why work with Kids?

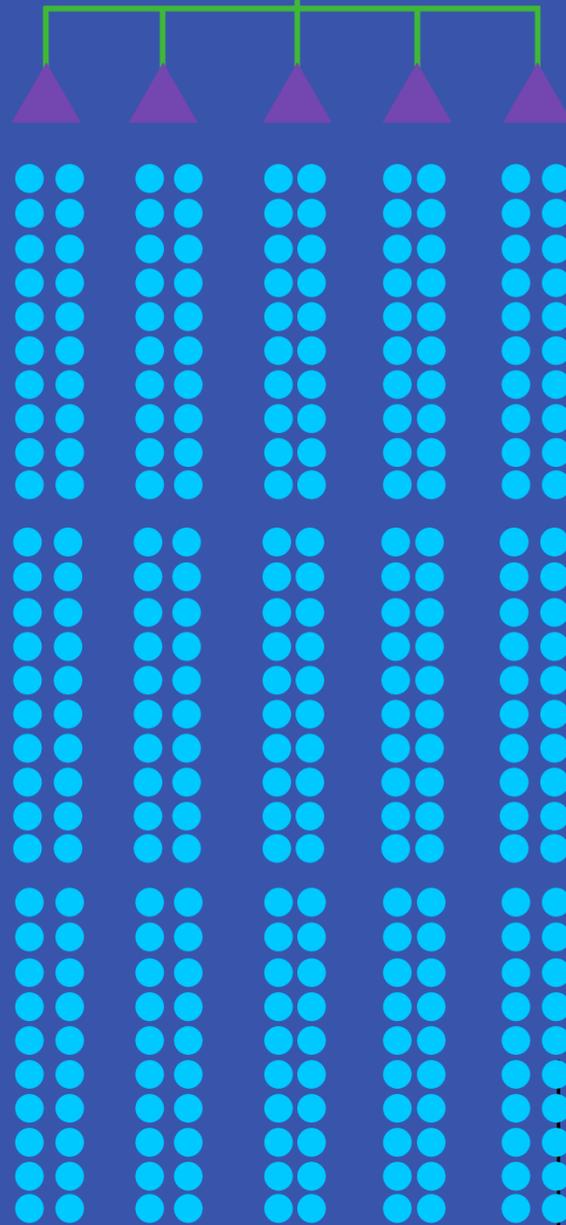
- Local connections
- Hands-on
- Passionate
- Meaningful



Classroom and Teacher programs



Reach = 20



Reach = 300

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Classroom programs



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Classroom programs



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Teacher training programs



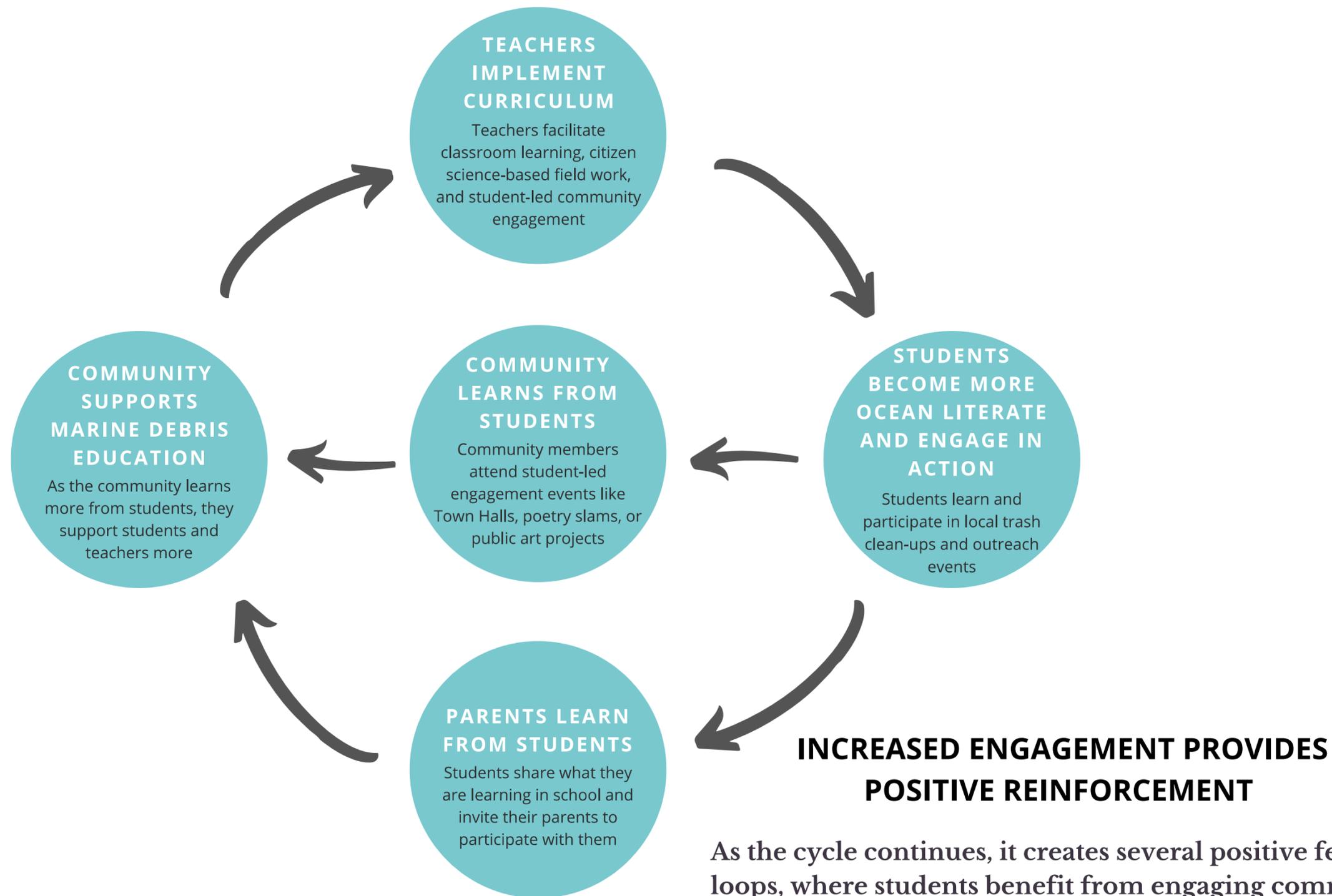
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Why work with Kids?

- Local connections
- Hands-on
- Passionate
- Meaningful
- Intergenerational transfer

Youth Can Promote Marine Debris Concern and Policy Support Among Local Voters and Political Officials

 Jenna M. Hartley^{1*},  Kathryn T. Stevenson¹,  M. Nils Peterson²,  Elizabeth A. DeMattia³,
 Savannah Paliotti⁴ and  Thomas J. Fairbairn⁴

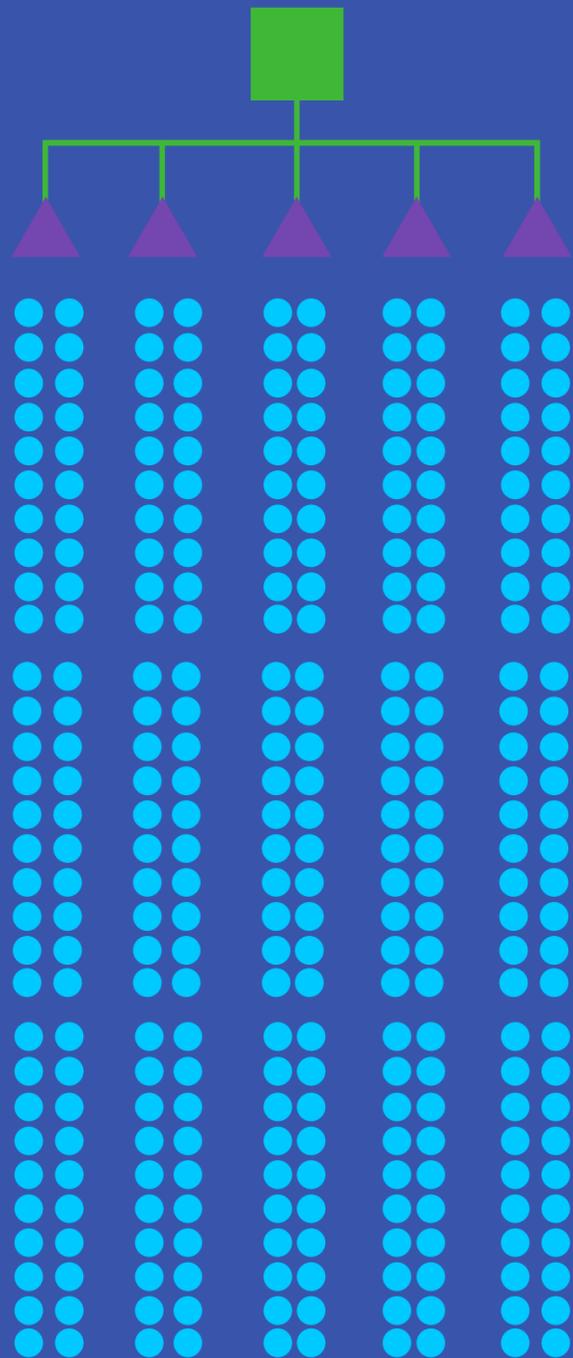


As the cycle continues, it creates several positive feedback loops, where students benefit from engaging communities while parents and students both benefit from increased interaction. In sum, the increased interaction among all parties builds support for teachers and students, saliency of the issue, and commitment to addressing the marine debris crisis. With enough collective momentum, we propose that this cycle could translate to real benefits for the ocean.

Citizen Science vs Community Science

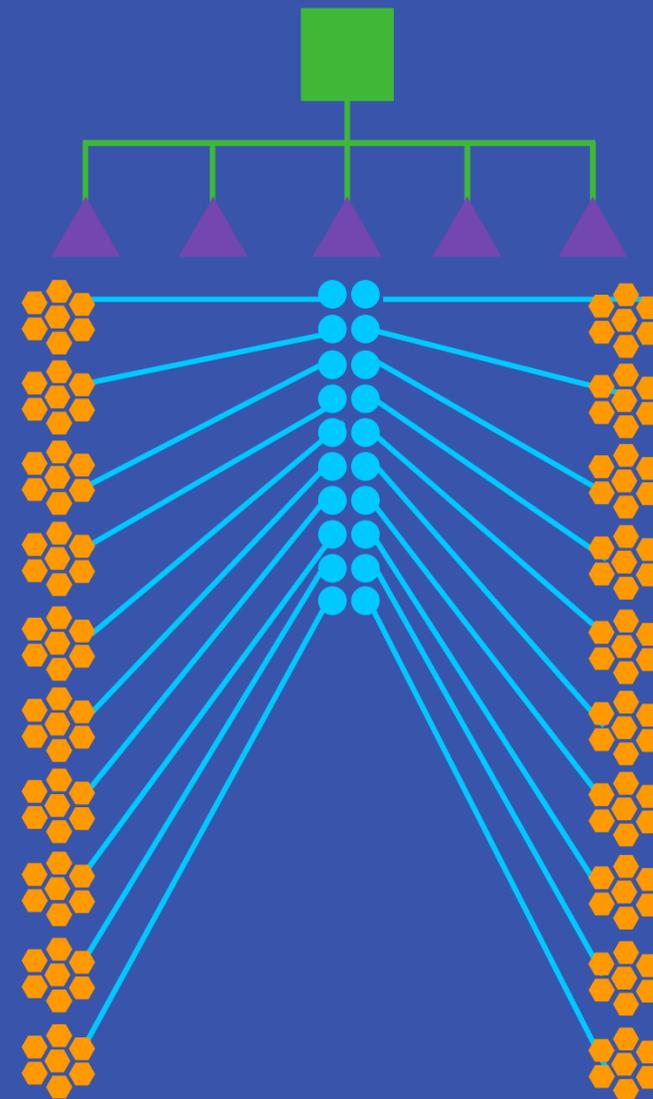


Reach = 20



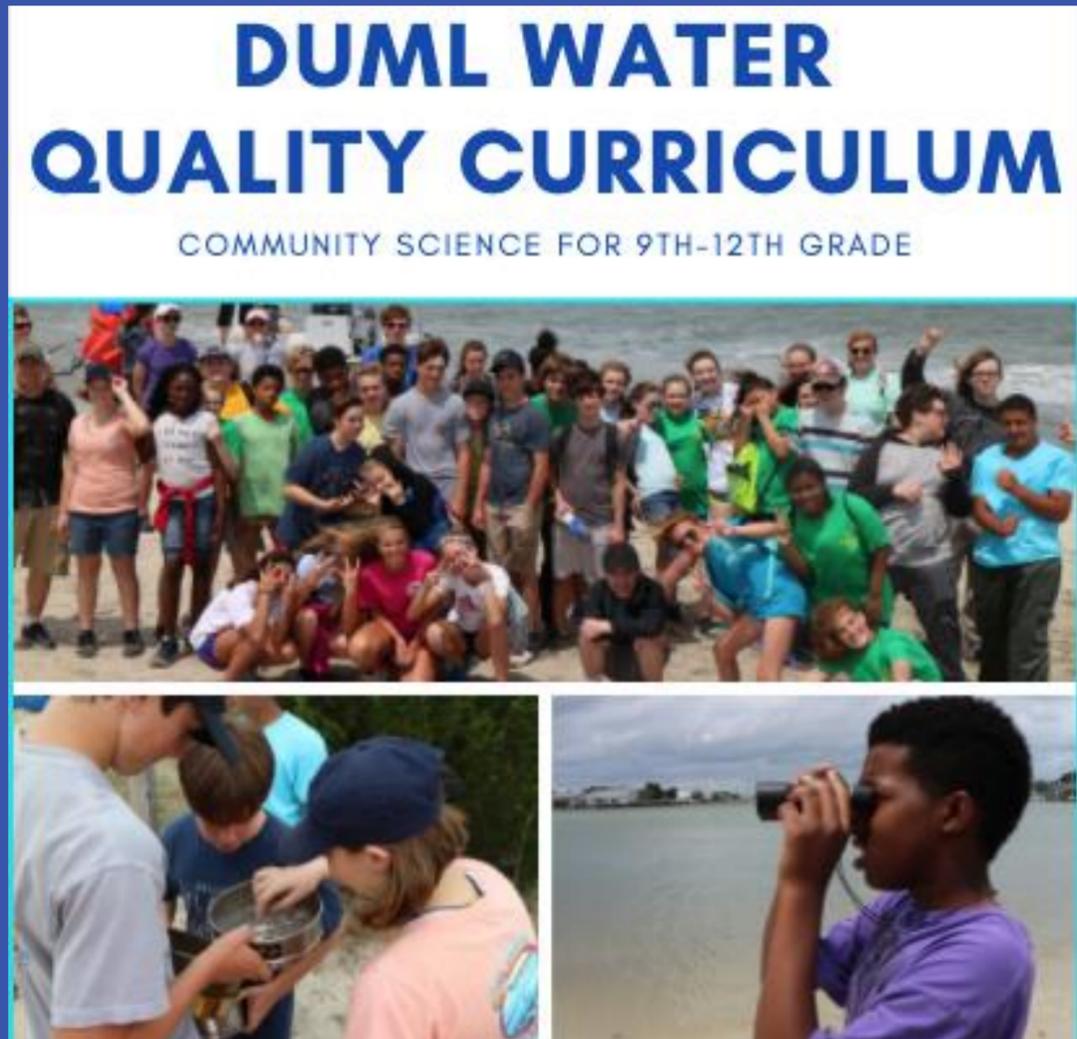
Reach = 300

Reach = 1050

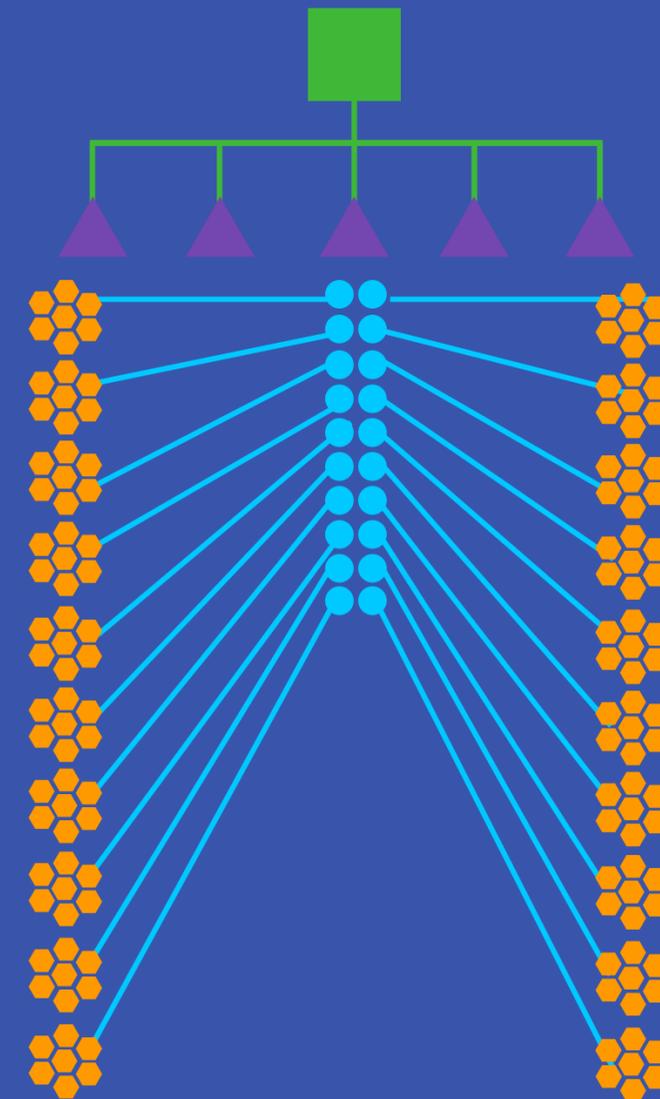


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Community Science: Water Quality



Reach = 1050



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Why Stormwater & Plastic Pollution?

- Local
- Visible to eye
- Connected to marine debris
- Affordable
- Data is missing
- Model system
- Action Oriented

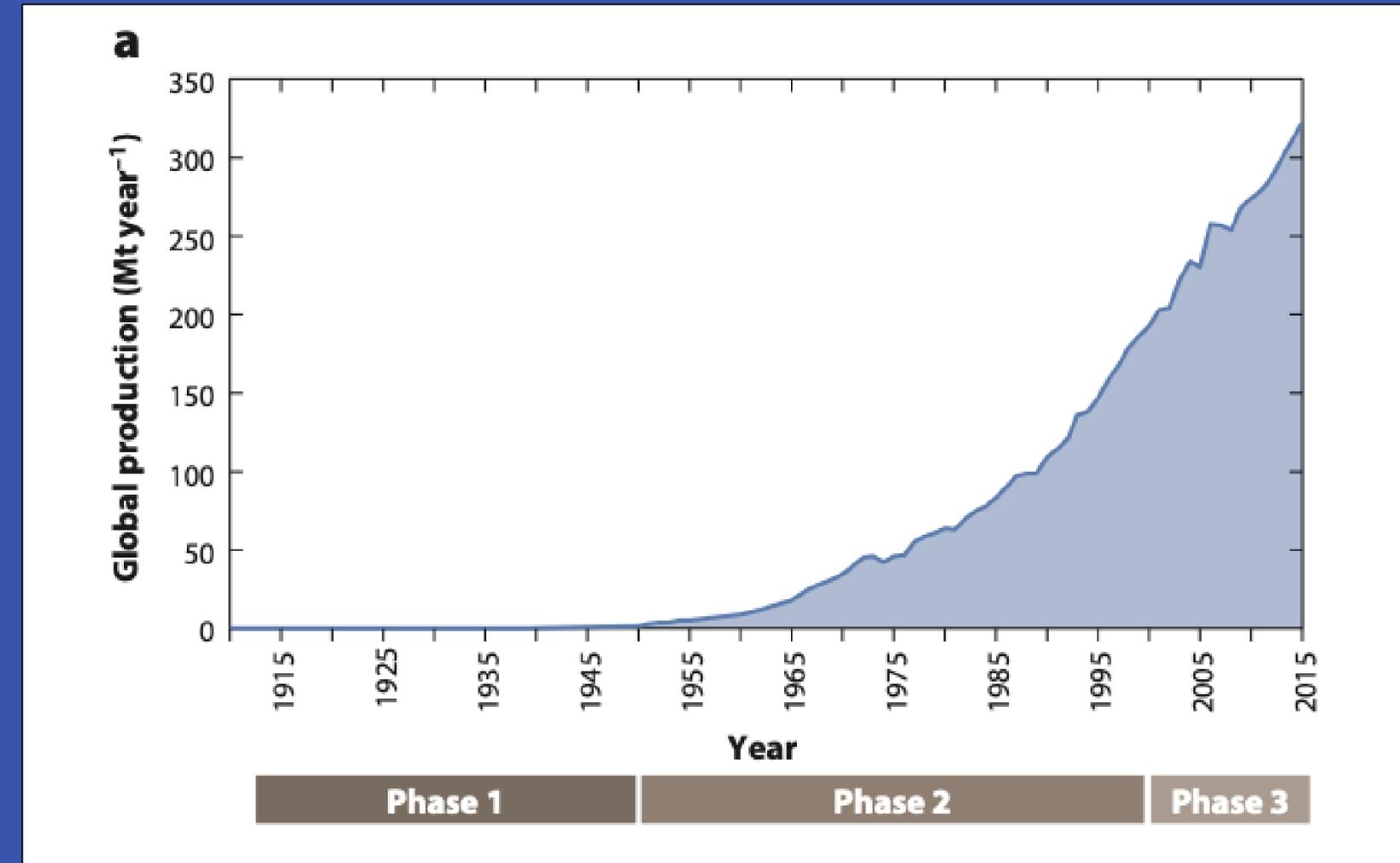


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Plastic Pollution?

Widespread use by 1950s

- 2015: 322 million metric tons produced (Mt)/year
- Total weight of the human population produced in plastic per year!
- Avg person disposes of 52kg of plastic/year



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DUML WATER QUALITY CURRICULUM

COMMUNITY SCIENCE FOR 9TH-12TH GRADE



WORKBOOK ROADMAP

1

CLASSROOM PREPARATIONS

These background activities are used to introduce the topics of: how to ask questions in science, water quality, and stormwater. These activities set the stage for the community science field research (Adopt-A-Drain) and for independent research.

2

COMMUNITY SCIENCE FIELD RESEARCH

This community science field research (Adopt-A-Drain) is designed to highlight how storm water can affect local water quality. By using microplastics as a model, students can see how storm water transports waste into our waterways. Students collect data, analyze their results and then create ways to disseminate their results

3

CREATIVE ENGAGEMENT

These community engagement activities are designed so that the dissemination products from the students (i.e., videos, powerpoints, posters, lesson plans) can be shared with the general public. By sharing their data/results, students develop a sense of civic engagement within their community.

4

OPTIONAL: INDEPENDENT RESEARCH OPTIONS

These optional independent research extensions build on the Adopt-A-Drain research and let students create hypotheses and test for the presence/absence of pesticides/nutrients in local storm water.

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Activities

- Impervious vs Pervious surfaces
- Making Science Simple
- What is Stormwater

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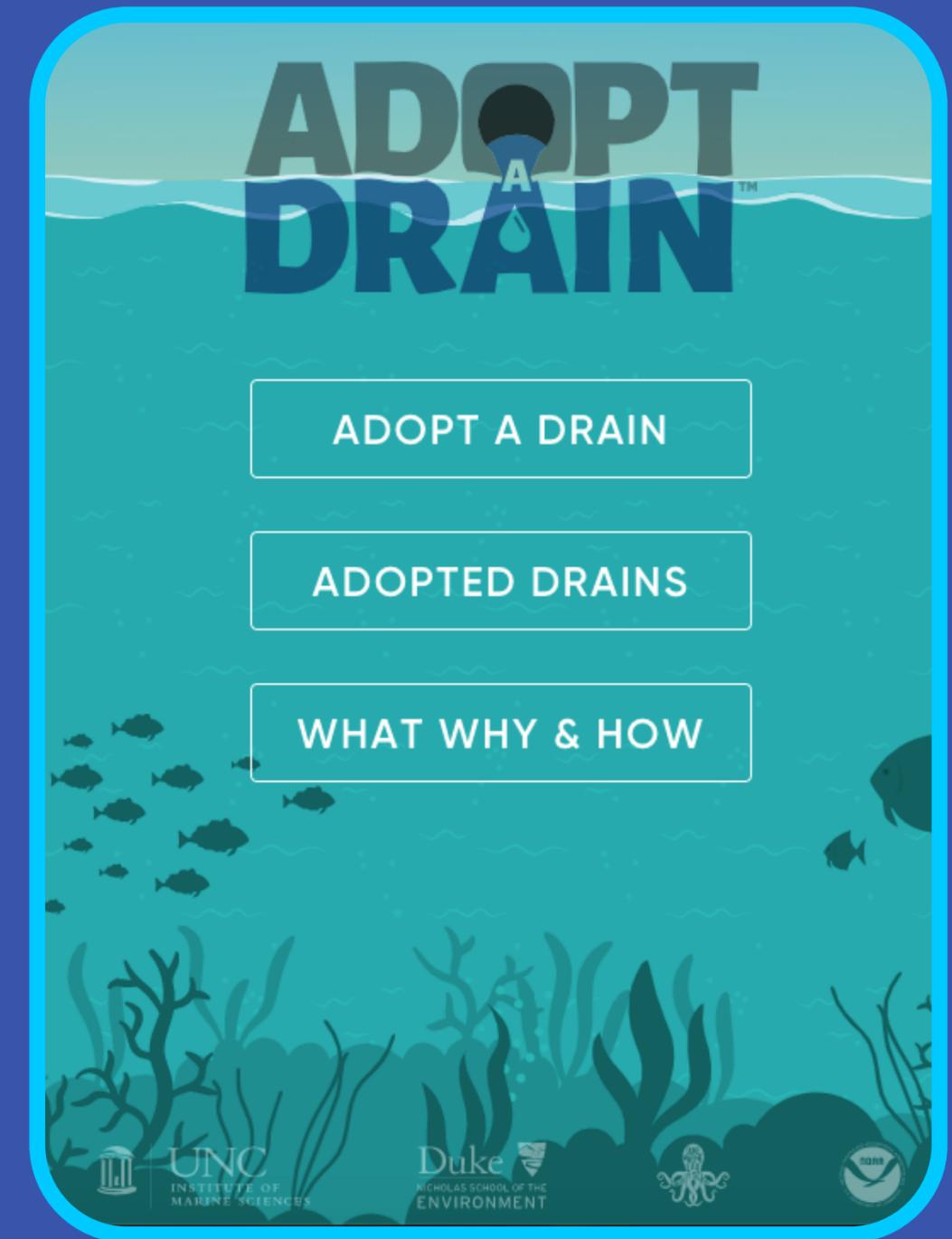
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Fertilizer and Pesticides in Runoff

Compare and Contrast:
Stormwater to Rainwater
NITROGEN

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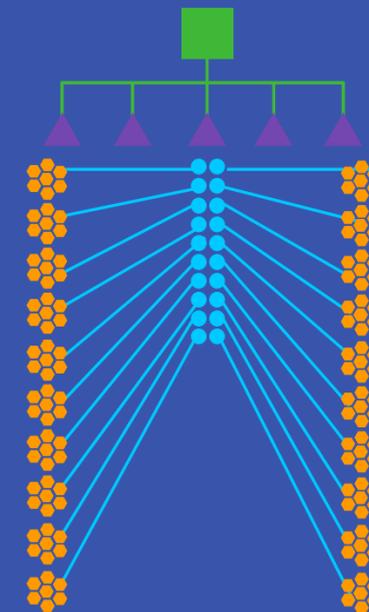
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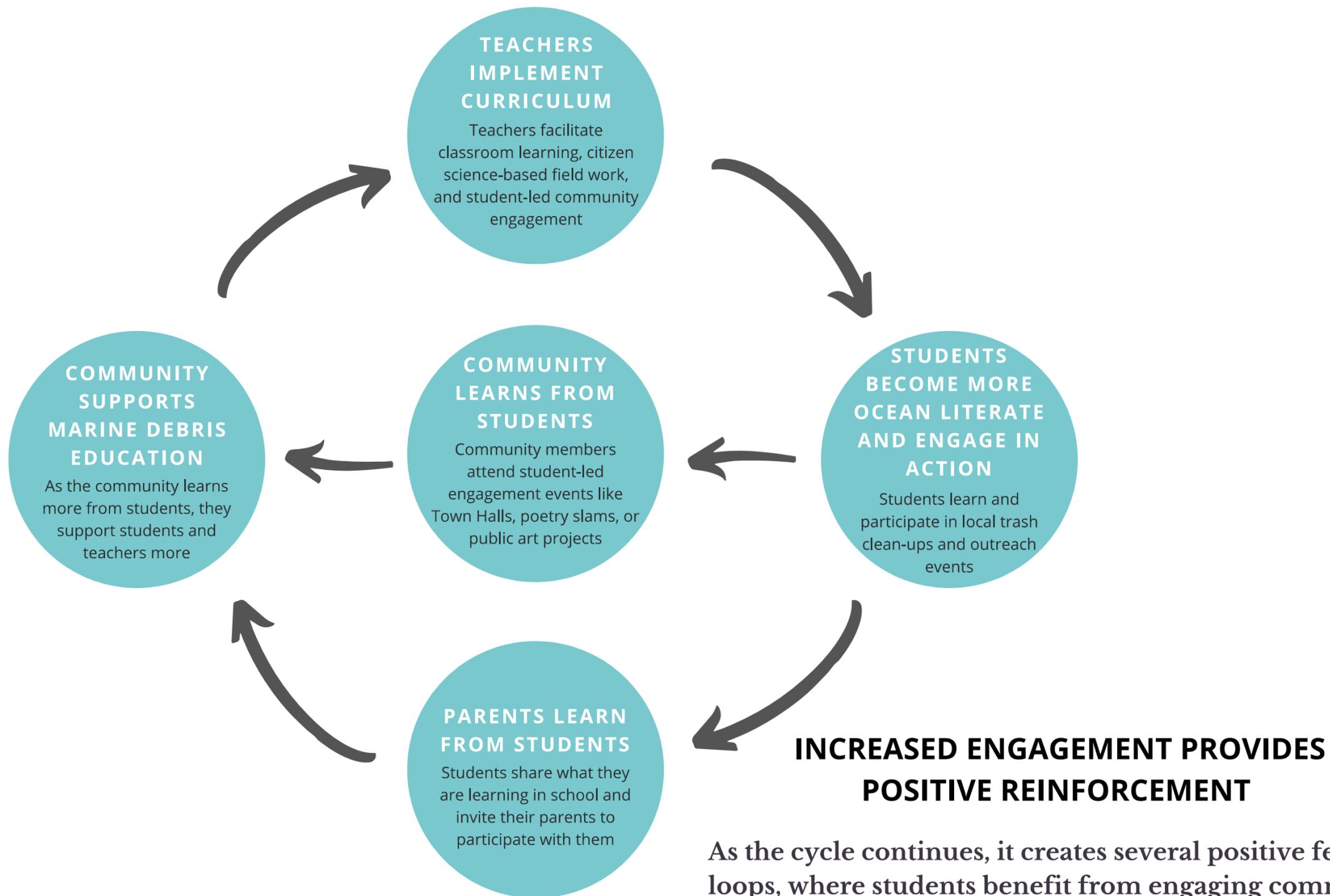
Creative Engagement

Sharing with the general public: SIPS

Civic Engagement within the Community



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What is next?

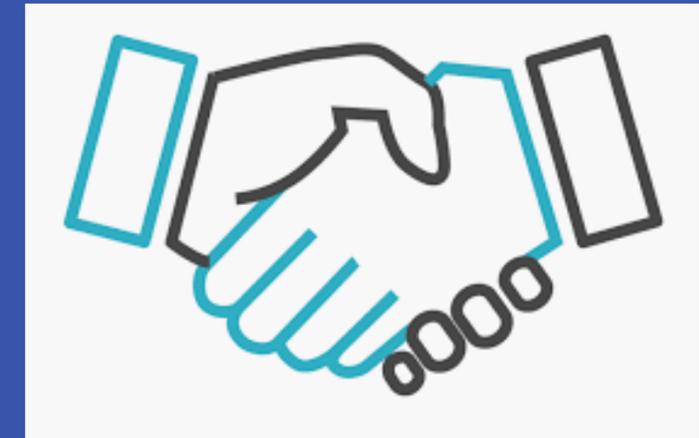


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Register to help us
improve our input
app: May 4th!

Email:
liz.demattia@duke.edu



Connect us to
teachers/schools
in your community!

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