

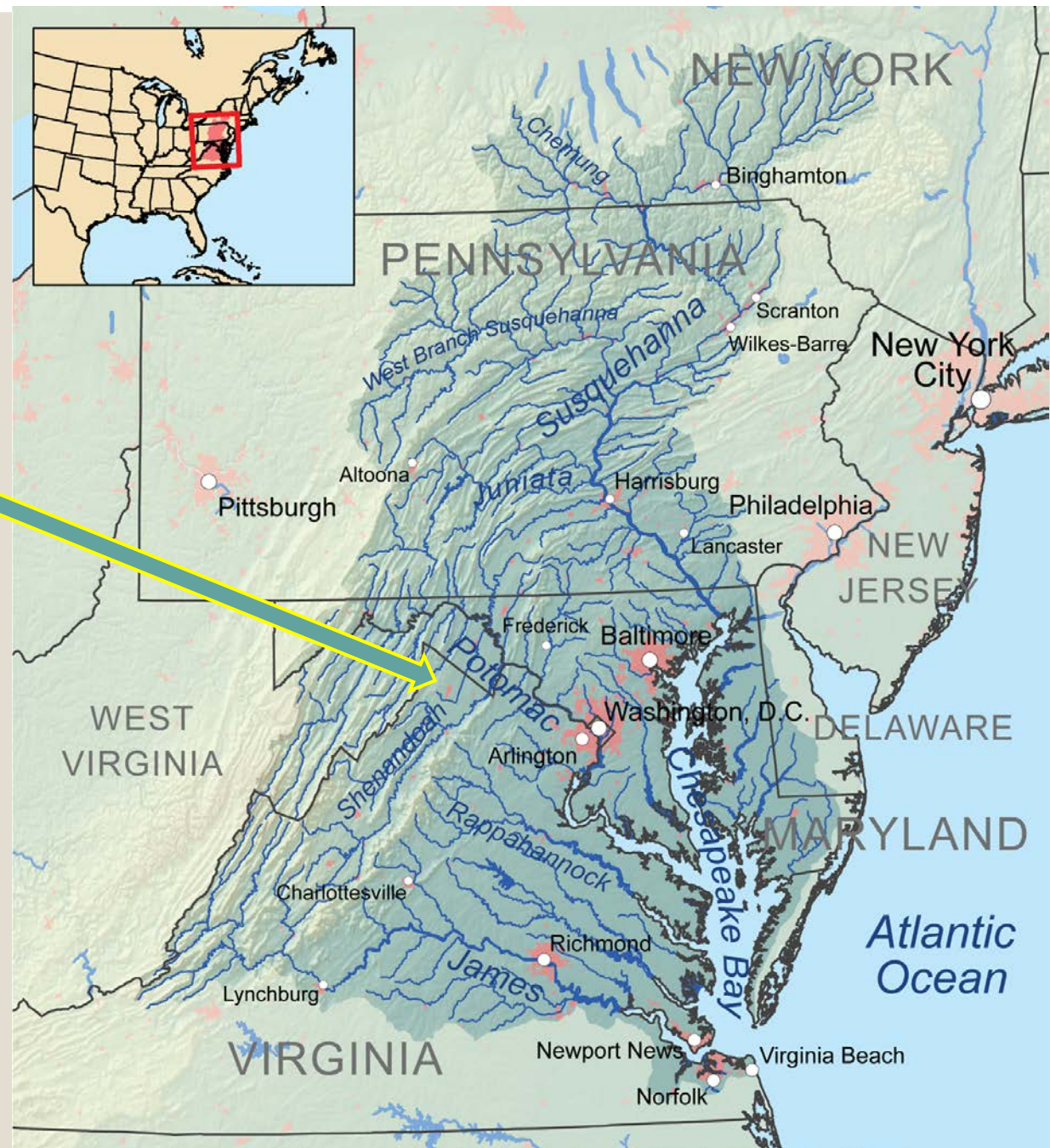
INTEGRATING STEM & MWEE

**A multi-disciplinary approach to teaching
project-based environmental education**

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Dr. Dat Le, Arlington Public School

Our Location



Arlington Public Schools



- Arlington County is a diverse community located across the Potomac River from Washington, D.C.
- 13th largest among Virginia's 132 school
- A total of 39 schools and programs
- Serving over 28,000 students
- Strategic plan core values focus on environmental sustainability and stewardship

**University of Virginia's
Blandy Experimental
Farm &
The State Arboretum of
Virginia**



Role as project partner:

- MWEE expertise
- Project conception
- Project administration
- Initial curriculum development
- Field site
- Create & manage a public web site



Our Mission: *"To advance understanding of the natural world through **education, outreach, and research.**"*

What is STEM?

- Science
- Technology
- Engineering
- Mathematics



What is Project-Based Learning?

- Project Based Learning engages students with hands-on investigations based on an authentic problem to gain knowledge and skills.

What is a MWEE?

- **M**eaningful
- **W**atershed
- **E**ducational
- **E**xperience



| PBL | MWEE |
|------------------------------|------------------------------------|
| Define a problem | Issue based; propose a question |
| Student centered | Student centered |
| Multiple step investigation | Classroom & outdoor investigations |
| Compose & test solutions | Collect data to answer a question |
| Multidisciplinary | Multidisciplinary |
| Analyze & synthesize results | Analyze & evaluate results |
| Communicate results | Communicate results |
| Project-focused | Action Project |

What are the essential elements of a PBL & MWEE?

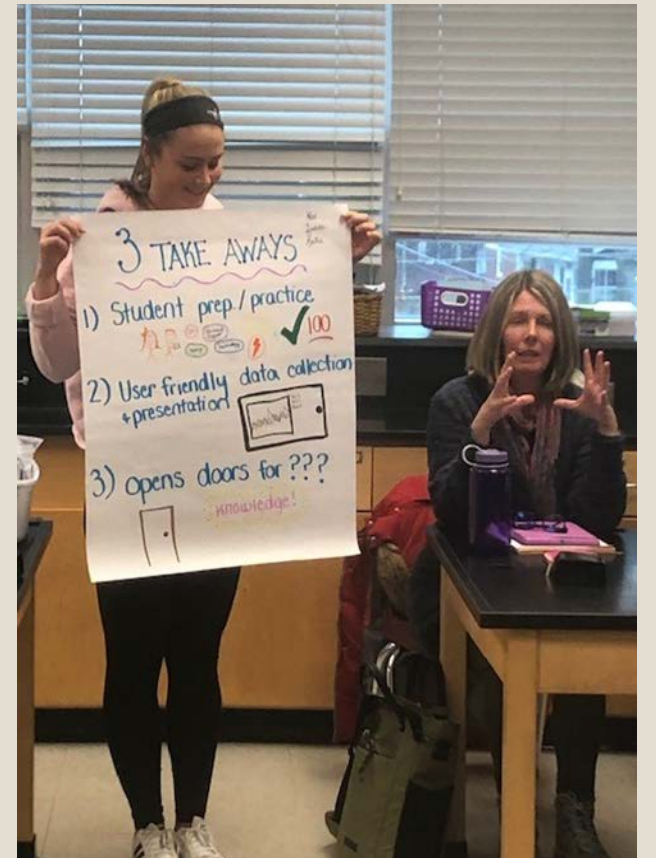


Benefits of Partnerships

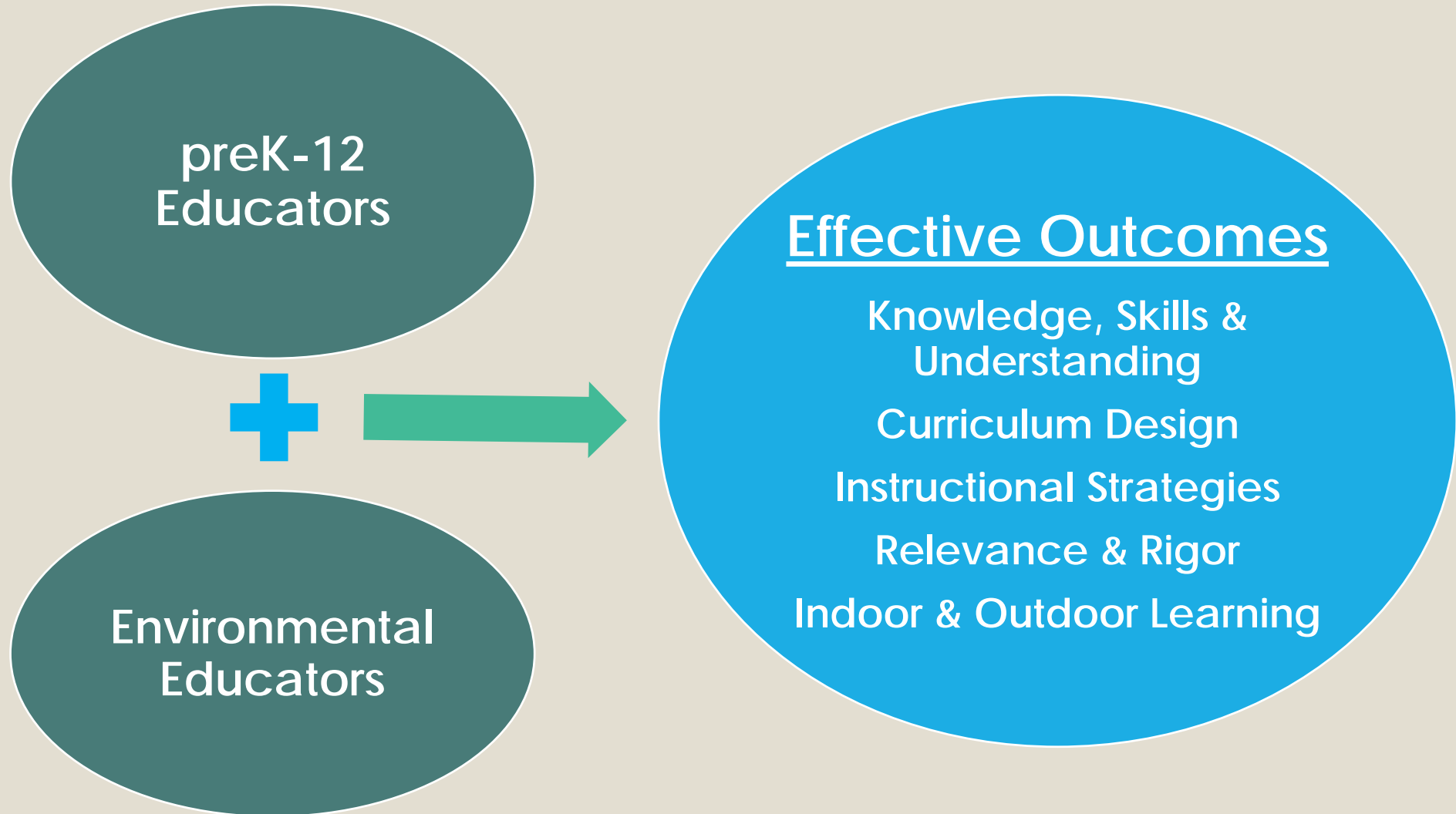


Partnership Ideas

- Parent and Community Expertise
- Local, state, federal agencies
- Businesses
- College and Universities
- Nonprofits



Effective MWEE Partnerships



Erosion & Sediment: Watershed Impacts & Mitigation



Explore: What are some causes of erosion & sedimentation?



Oysters: What are some impacts of sedimentation?

Design & test:
How can we reduce sedimentation?



Elementary students reducing litter impact in the watershed

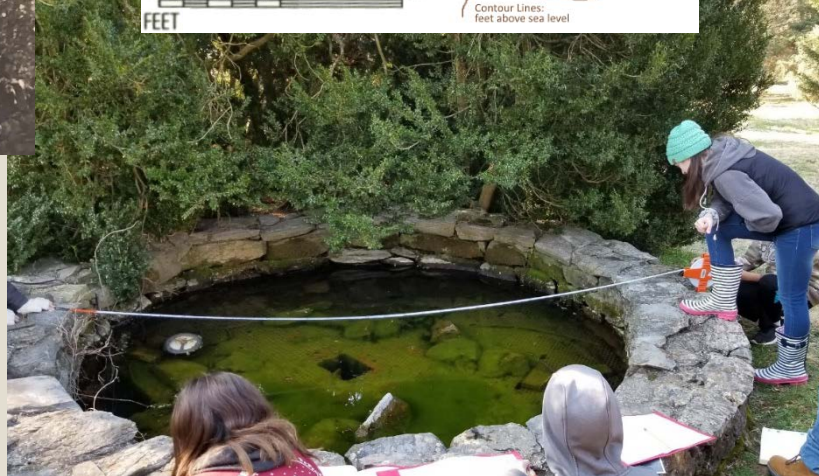
- <https://www.apsva.us/aps-green-scene/>



Exploring land use history: Past uses influence present & future uses

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Year-Long Stream Monitoring



Action Projects: Community & Civic Engagement



Parents:

Take the Watershed Pledge:

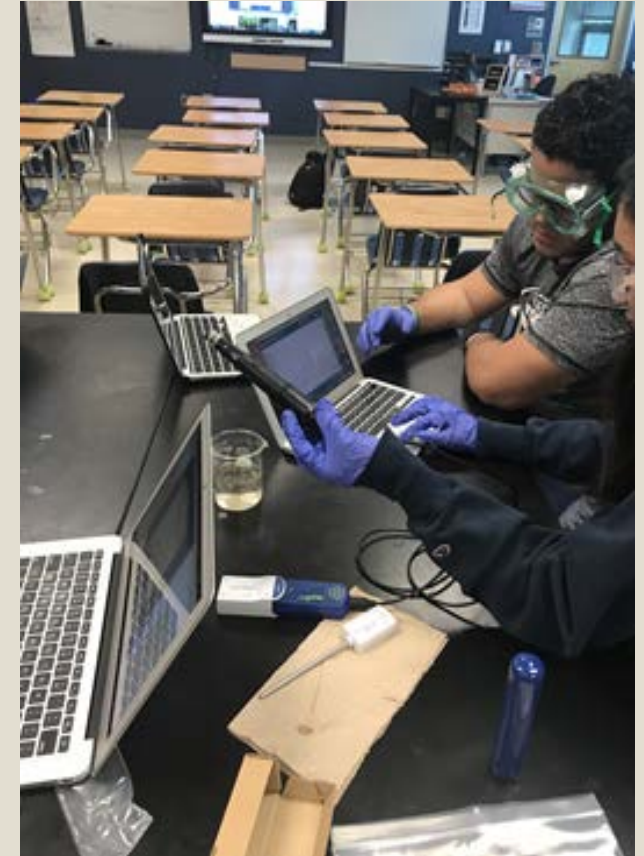
- 1 Reduce the rate and Volume of runoff from your Property.
- 2 Reduce your overall water usage.
- 3 Make choices that improve the quality of water running off your Property.



**Student Voice/
Student Advocacy**



Assessment

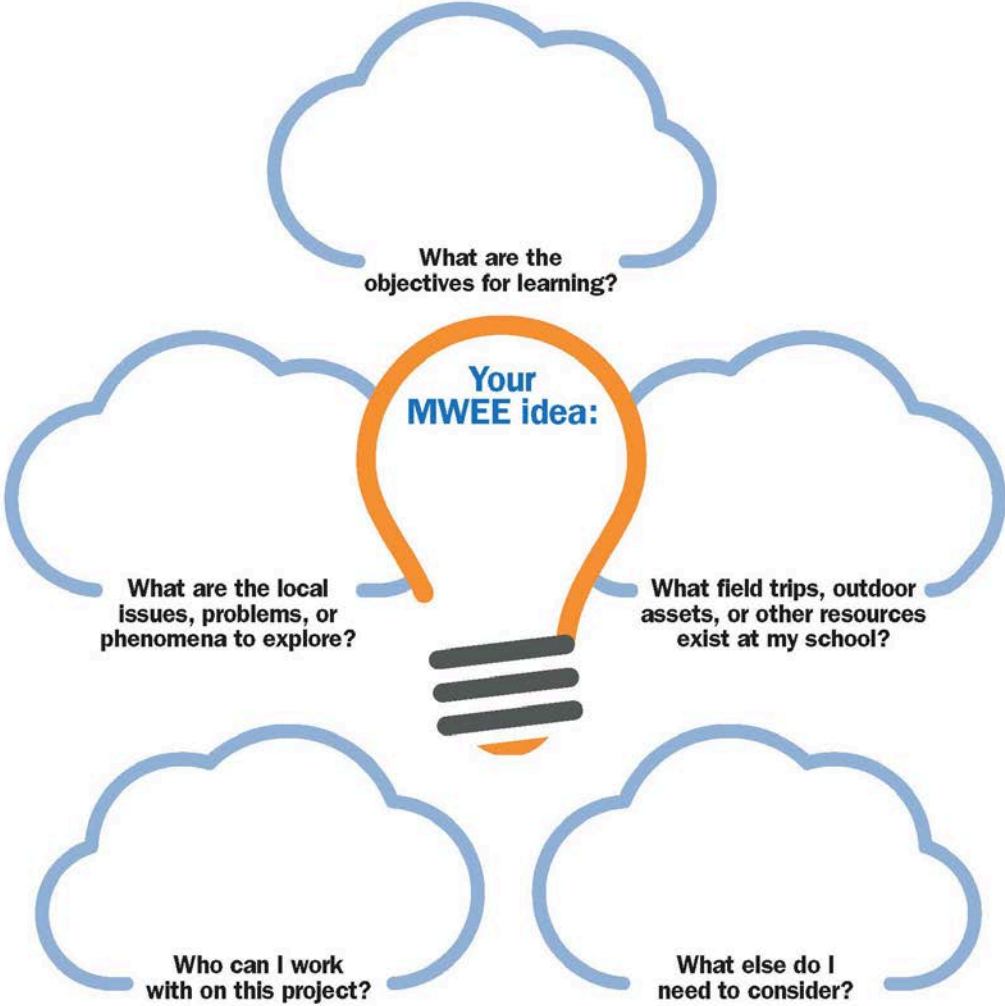
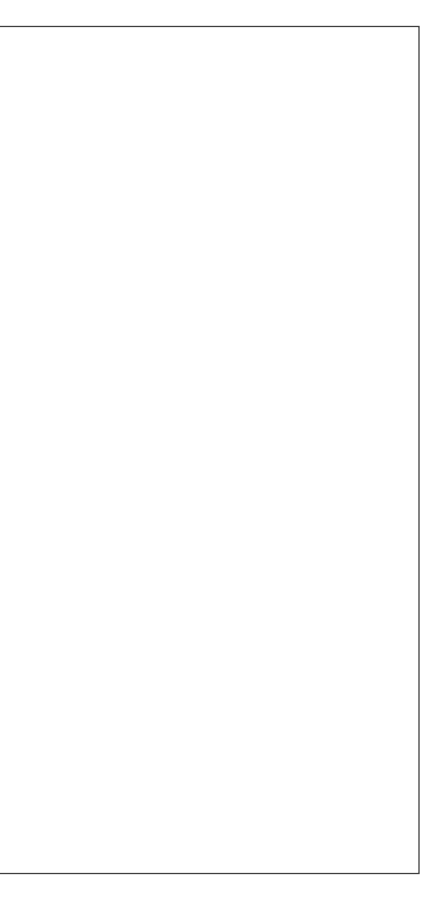


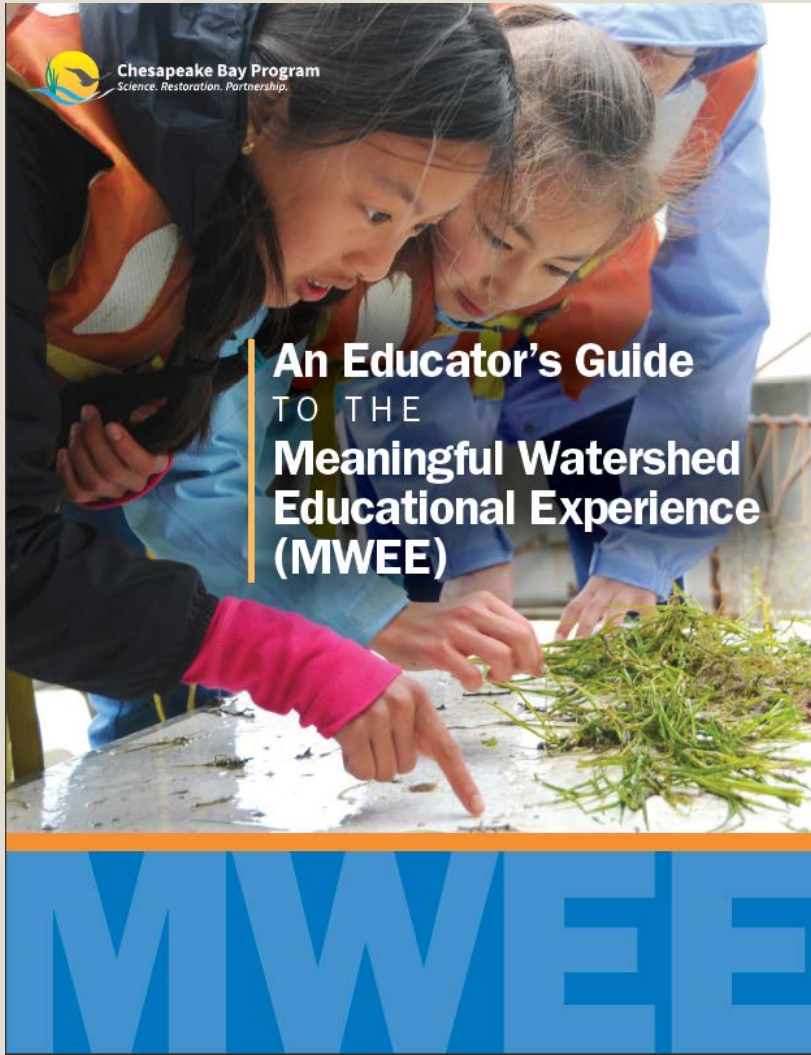
Next Steps:

Brainstorm MWEE ideas, including the following:

- What are some environmental issues where you live and work?
- Who are the potential stakeholders and partners?
- What are potential funding sources?
- What is the project plan, including the environmental focus and targeted audiences?

MWEE Think Cloud





The MWEE Guide

A tool to connect field & school-based educators in the service of designing & implementing MWEEs.

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