

COLLABORATING TO ACHIEVE SYSTEMIC, SUSTAINABLE WATERSHED EDUCATION & CIVIC ACTION

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A COLLABORATIVE SUCCESS STORY

BLANDY
EXPERIMENTAL FARM



University
of Virginia



friends of the
RAPPAHANNOCK



CHESAPEAKE BAY
NATIONAL ESTUARINE
RESEARCH RESERVE
VIRGINIA



WHAT IS A MWEE?

Meaningful Watershed Educational Experience

MWEE Essential Elements

1. Issue Definition
2. Outdoor Field Experience
3. Synthesis and Conclusions
4. Stewardship and Civic Action

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 the question
Multidisciplinary	Multidisciplinary
Analyze & synthesize results	Analyze & evaluate results
Communicate results	Communicate results
Product-focused	Action Project

What are the essential elements of a PBL & a MWEE?

PBL: Problem-Based Learning

MWEE: Meaningful Watershed Education Experience



Conceptualized by Candace Lutzow-Felling

Guiding Principles for Systemic ELit:

1. **Individuals develop along a continuum of environmental literacy over time (NAAEE 2011)**
1. **Key factors for developing environmental literacy: observational skills, systems thinking, interdisciplinary connections, outdoor experiences (NAAEE 2019)**
1. **Outdoor-based learning benefits ALL learners (Kuo et al 2019)**
1. **Teachers need to have similar experiences as their students; engage in active learning (NAS 2015)**

Actions/Strategies for Systemic ELit:

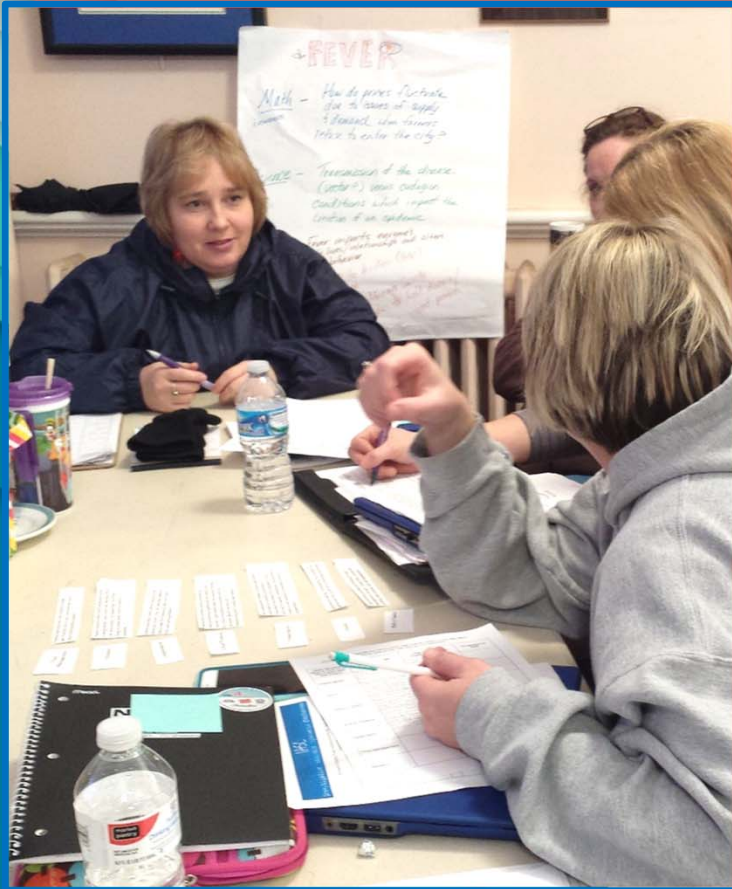
1. **Create a comprehensive ELit strategy that scaffolds over the entire K-12 student experience**
1. **Key factors incorporated into the curriculum for all grades, K-12**
1. **All students participate in outdoor-based learning activities**
1. **Purposefully incorporate ELit concepts, instructional methods, & skills into professional learning**

NAT DRAPER - Issue Definition

Students focus on a driving question!

The driving question addresses a locally relevant environmental issue, problem, or phenomenon requiring background research and investigation.

Stop and Jot: What is an issue you care about in your community and turn that into a driving questions.



Be ready to share at the end about how to take the issue you chose through the MWEE process.

Who could you **collaborate** with (stakeholders)?

How could you make it **systemic** (what are root causes)?

How could students continue to investigate this issue over time and make long term community-level change (**sustainability**)?

Activity: You have 90 seconds to create a driving question!!

Example: In the Richmond community, how do humans impact the health of the James River and the surrounding ecosystem?





Candace Lutzow-Felling

Educators Collaborating on Field Investigations

How do different land surfaces affect surface water run-off & groundwater recharge?

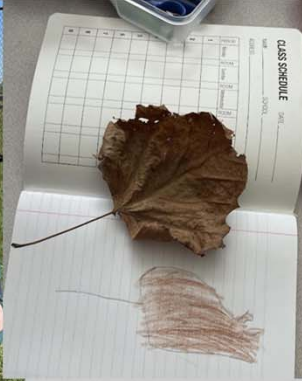


How can we improve this investigation for our students?





1st graders observing & recording leaf characteristics



7th graders measuring, laying out, & planting a pollination garden



4th graders exploring surface water run-off on two ground surfaces: bare soil & native plants



HS students assessing biodiversity & creating "biodiversity bouquets"



Teachers learning how to identify trees

Educator partnerships: classroom & environmental educators



Collaboration results in investigations that are:

- Aligned with classroom teaching
- Tailored to meet the specific needs of a teacher's students
- Better! Everyone needs an editor

Collaboration fosters program sustainability because:

- Teachers "own" the investigations
- Creates a team between classroom & environmental educators



SARAH JENNINGS

Student-led community-level action
Earth Force



Example of Environmental Action Civics

Jamestown Elementary,
Arlington VA
2nd place Caring for Our
Watersheds

Many collaborators to create
community-level collaboration
and sustainable/systemic change!



APRIL HARPER

Teacher Professional Development & Support
Friends of the Rappahannock

MWEE PD Survey

Watershed Pre-Assessment
Needs Assessment
Dietary Restrictions for Lunch



Contact april.harper@riverfriends.org for questions.

Section 1 of 3

MWEE Pre-PD Survey

This is a three part survey to help Friends of the Rappahannock gain information for the upcoming MWEE Professional Development for Rappahannock County with funding provided by Chesapeake Bay Trust.

The PD is to be held at Rappahannock High School on September 29th, from 8:30am to 12:30pm.

Section 1 is a watershed pre-assessment.

Section 2 is a needs assessment.

Section 3 is for dietary needs for lunch orders.



Establish Knowledge *I want to know...*

Basic science and outdoor experience
What are you already doing & proud of
What are your favorite resources

Establish Needs *I want to know...*

The struggles and challenges you're facing
Do you want help?
Are you in survival mode?

Plan Accordingly

Agenda based on knowledge and needs
Incorporate the appropriate resource partners
Build in trust and listening opportunities

Keeping the Fun Going *Take Aways...*



During

- Options for learner choice
- Manage expectations for incorporation
- Opportunity to plan, vent, and play
- Emphasize place-based

After

- Continual contact, but more than an email
- Share opportunities beyond yourselves
- “Separation of church and state”



Getting Pre-Service Teachers Involved in EE

Sarah Nuss

Education Coordinator, Chesapeake Bay National Estuarine Research
Reserve in VA

Virginia Institute of Marine Science

Tied to course syllabus

Tied to standards and other requirements for PSTs

Faculty as Partners



Flexible structure

Applicability to different disciplines

Personalized development

Scaffolded takeover by faculty

Virginia Teachers Innovating and Designing Experiential Science (VATIDES)

Year 1

- Tailored professional development (remote learning) for each university across full academic year
- Guest presentations
- Student summit

Year 2

- Tailored professional development (hybrid) for each university across one semester, including field experience
- 1 Guest presentation
- Faculty summit



Findings and Next Steps

Pre-service teacher assessment

Content Knowledge
MWEE Self-Efficacy Scale
Pedagogical Knowledge

Faculty assessment

Role
Alignment with syllabus
Value

What's Next? - MWEE Education Hub



Reflections and Questions

We would love to collaborate with you!

- ❖ April Harper, Friends of the Rappahannock
- ❖ Nat Draper, James River Association
- ❖ Candace Lutzow-Felling, University of Virginia
- ❖ Sarah Jennings, EarthForce
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