Creating environmental education programs based on the VA Standards of Learning

Anne Petersen  
STEM Director, VA Dept. of Education

Candace Lutzow-Felling  
Director of Education, State Arboretum of Virginia/UVA
Workshop Road Map

1. Introductions & Workshop Overview
2. VA Standards of Learning (SoL) & Curriculum Framework
3. Elit Lesson Analysis
4. Partnering with Schools
5. Wrap up & Next Steps
Virginia SOL

- SEPs: Science & Engineering Practices SoL x.1
- Content Standards SoL x.2 to….

Virginia Curriculum Framework

- SEPs: Indicated by a leaf icon
- More details for each content standard:
  - Central idea
  - Vertical alignment: what students have been taught in earlier grades & will be taught in later grades (grade level connections)
  - Enduring understandings: key concepts & big ideas that students learn
  - Essential Knowledge & Practices: what students should know & be able to do related to the standard
Group Activity

Mapping Connections:

Where are there connections between concepts, SEPs, & EE supported field experiences?
# Lesson/Program Analysis

<table>
<thead>
<tr>
<th>What are the students doing in this lesson/program?</th>
<th>What science standards(s) does this lesson/program align with?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What SEPs are incorporated into this lesson/program?</td>
<td>How can this lesson/program be revised to better align with the standards?</td>
</tr>
</tbody>
</table>
Water wonders outline:

1. Introduction to Arboretum/Arboretum etiquette
   a. Beach ball activity
      i. Choose a student to tally results, sh method, with water at the head of o other.
      ii. Using an earth beach ball, instruct the student catching it reports the %
      iii. The data is recorded in the appropri
      iv. Continue until 20 or 25 tally marks a v. Ask the students to calculate the %
      vi. The result should indicate that appr surface is covered by water.
   b. Water makes up about two-thirds of our box
   c. Is essential for all life.

2. Why study water?
   a. Group responses on overhead/board;
   b. Underline words that fit and features that: watershed;
   c. Point out "official" definition on posters: land river or body of water.

3. What is a watershed?
   a. Group responses on overhead/board;
   b. Underline words that fit and features that: watershed;
   c. Point out "official" definition on posters: land river or body of water.

4. What are Virginia’s major watersheds?

Grade 4-6

Goal: Students will gain an overall understanding of how this relates to watersheds and ecosystems in Virginia.

Key Concepts:

Knowledge: Students will learn what a water indicator is and how it can affect a watershed in Virginia.

Skills: Students will use water quality test kits and use a macro invertebrate sorting sheet to identify Blandy. Students will learn to assess overall water quality and many life forms depend on the health of an ecosystem.

Values: Students will learn the importance of Virginia’s major ecosystems and that many life forms depend on the health of an ecosystem.

Virginia SOLs addressed: Science 3.1, 3.3, 3.9; Math 3.17, 3.5, 5.11; 6.11 Social Studies 3.6; V

Materials:

- Water data collection sheets record data
- Laminated topographic maps
- Macro invertebrate sorting sheets
- Water testing equipment- Thermometer

Virginia SOLs: Science (2018): 6.1, 6.6, 6.8, 6.9
Math (2015): 6.6

Materials:

Water Chemistry (see Appendix A: Water Chemistry Background Information)
- Data sheet
- Mats (one per group)
- Buckets of water from water source
- Direction pages and testing materials for the following tests:
  - Thermometers
  - pH test strips and color chart
  - Nitrate tests-tablets and vials
Tips for Partnering with Schools
The environmental literacy learning continuum

**Interpretation**
- **Teaching about nature & human interactions with it**
  - **Learning:** Informal; Free choice
  - **Who:** Community members
  - **Focus:** Experience nature; Personal connections
  - **Methods:** Themes & an interpretation plan

**Sharing our knowledge & skills with others**
- **Interpreter**

**Formal Education**
- **Environmental education (natural & social systems)**
  - **Learning:** Formal; Required (K-12)
  - **Who:** Students
  - **Focus:** Know & understand nature & human impacts
  - **Methods:** Learning standards & lesson plans

**Teacher**
Environmental Educator Partnerships with Schools

What do we Know?
- Nature systems & organism knowledge
- Expertise in observing nature
- How to engage youth in learning about nature
- Outdoor learning expertise
- Tools/supplies for learning outdoors

Need to Know
- VA Standards of Learning (SoL)
- Who to contact at the school division or an individual school
- Your age group comfort level
- Specific needs of the school division, school, teacher
- Some of the environmental issues in your community

What you can do as a partner
- Develop a program or programs that target one or more SoL (science or history are good starts)
- Provide wonderful, safe outdoor learning spaces for students
- Provide unique learning experiences that students would not have in the classroom (must align with the standards & stated needs)
- Perhaps you could build a program to help students understand one or more environmental issues & think of ways to address them
VDOE Superintendent Regions
Summary:
What have we learned today?
What will be my/our next steps for partnering with schools?

Questions?????
Thank you!

We’d love to continue this learning with you.

Anne: anne.petersen@doe.virginia.gov
Candace: lutzow-felling@virginia.edu