

Virginia Environmental Literacy Update

June, 2021

BACKGROUND DATA

ELIT Summary [[Full Report](#)]

Most Virginia LEAs (60%) are somewhat prepared to implement high quality environmental education; another 22% are well prepared. A third or more of Virginia LEAs have system-wide MWEEs in place for all three grade levels. System-wide MWEEs were most common in middle school, at 41% of responding LEAs. Over one-third of Virginia LEAs have designated staff responsible for coordinating sustainable school efforts. An equal number of LEAs incorporate sustainable school efforts into their curriculum. Virginia LEAs reported that their greatest need for improving EE was funding followed by teacher professional development. This data is from 82% of districts representing 94% of students in Virginia.

Standards of Learning

- Environmental education concepts are interwoven into the 2018 *Science Standards of Learning* providing students opportunities to learn foundational content and later engage in more complex environmental concepts as they progress in science courses K-12.
- Climate change is introduced into the 2018 *Science Standards of Learning* in sixth grade and spirals through the secondary science standards. The rationale for waiting to introduce the term and the concept of climate change until the sixth grade curriculum was twofold. Students need a foundational knowledge of weather, climate, matter and energy, geochemical cycles, Earth systems, and ecosystems prior to introducing the more complex concept of climate change. The introduction that 6th graders have in elementary school in these areas allow students to use and apply climate change data to develop a basic understanding of this complex issue. Students are expected to build on these foundational concepts in middle school and apply these concepts as they construct a more robust understanding of climate change in Earth Science. The decision to introduce climate change in sixth grade was based on research using NGSS and other state standards. The inclusion of climate change in sixth grade also led to the development of the sixth grade theme, Our World, Our Responsibility. The intent is to have students realize that their actions, the actions of others in their community, and the actions of nations have significant impact on our planet and for future generations. Telling students that their actions have an impact may not inform their actions. Allowing them to be able to use data to "discover" the impact of actions and build an understanding of climate change has a much greater and long lasting impact on students and their actions. This level of critical thinking, data analysis, and modeling may not be appropriate for students younger than sixth grade or Earth Science.
- In Virginia, schools are expected to develop science and engineering practices to support science conceptual understanding of the science content in the standards of learning. Division leaders must certify these standards are being taught at every grade level. In addition, these standards, including the environmental concepts, are assessed at the state level in 5th grade and middle school as well as end of course assessments in biology, chemistry, and Earth science.
- The Environmental Science Content Guidelines provide content and practice expectations for students enrolled in the secondary environmental science course. These content guidelines were developed with input from environmental stakeholders and are intended to become standards of learning during the next science revision in 2025. These content guidelines were updated in February, 2021 to include environmental justice.

Teacher preparation

- Preservice teacher preparation in Virginia currently requires that all preservice teachers engage in field experiences as part of their preparatory coursework. All teacher preparation programs are reviewed by Virginia Department of Education science staff to ensure that this expectation is met.
- Virginia Department of Education and partners (Department of Wildlife Resources, Department of Forestry, Chesapeake Bay Foundation, and the Chesapeake Bay National Estuarine Research Reserve) recently concluded a statewide environmental education initiative developed to provide sustained, hybrid professional learning opportunities for both teachers and administrators.

RECENT ACCOMPLISHMENTS

- The last cohort of educators completed the BWET Mountains to the Bay hybrid professional learning opportunity at Kiptopeke State Park in October, 2020.
- The environmental science content guidelines were revised to include environmental justice in February, 2021.
- The Virginia Environmental Literacy Plan Template was created by environmental stakeholders and shared with both formal and nonformal educators. Members of the Virginia Resource Use Education Council presented the template to division science leaders in April, 2021.

CURRENT ENVIRONMENT

Existing Environmental Education Efforts/Priorities

- Place Based Education and field experience continue to be promoted in teacher and leader virtual training in Virginia. The outdoor experiences allow for students to engage in common experiences; these experiences provide a basis for the development of science conceptual understanding.
- The priorities for environmental education and climate change instruction in Virginia include:
 - continue to use place based instruction and field experiences to build opportunities for students to develop and apply science and engineering strategies;
 - continue collaborating with environmental stakeholders to promote climate change and environmental literacy professional development;
 - collaborate with VRUEC and environmental education organizations in vetting environmental science instructional plans;
 - develop and provide a webinar to teachers and leaders on climate change and the standards of learning; and
 - solicit funding for VDOE sponsored environmental science professional learning opportunities for teachers and leaders.

Existing Climate Change Education Efforts/Priorities

- The priority for climate change education includes:
 - develop and provide a webinar to teachers and leaders on climate change and the standards of learning; and
 - review current standards of learning through the lens of climate change in preparation for the next science standards revision.

Connections with Natural Resource agencies

- Collaborate between state agencies to provide environmental science education through a virtual platform.
- Work with divisions to support placed based environmental education on site and outreach.
- The priorities for environmental education and climate change instruction in Virginia include:
 - collaborate with VDOE and state partners to provide students, educators and communities place based instruction and field experiences and apply the science and engineering practices;
 - continue collaborating with environmental stakeholders to promote climate change and environmental literacy professional development;
 - develop and provide webinars to teachers and leaders on climate change and the standards of learning; and
 - continue to build relationships with divisions to provide nonformal educator support.

Existing Educational Equity Efforts/Priorities

- Virginia is currently engaged in equity work as it strives to prepare students for next steps after public education to include both the workplace and higher education. This focus on equity includes engaging in Deeper Learning work, developing and using the 5C's (communication, collaboration, critical thinking, creative thinking, and civic engagement), and recognizing and meeting the needs of all students in the classroom. This work is being done within VDOE, within and across divisions, and with stakeholders. In the environmental science arena, this work includes a focus on environmental justice.

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Opportunities

- Opportunities include
 - extended reach due to virtual PD
 - increased use of state and federal park and public green spaces during pandemic leading to a greater appreciation for the environment.
- Funding that may be leveraged for this includes the CARES and CARES II Act funding.

Challenges

- Virginia is a locally controlled Commonwealth that allows flexibility to divisions on to the amount of time allocated to the instruction of the different discipline standards. Time allocated to science instruction, to include environmental science, varies widely in elementary school. The variance leads to gaps in science conceptual understanding as well as in the science and engineering process entering middle and high school.
- Teacher efficacy in complex science concepts such as climate change varies based on background and learning experiences.

ENVIRONMENTAL LITERACY NETWORK

State Working Group: Virginia Resource Use Education Council

NAAEE Affiliate: Virginia Association of Environmental Educators

Other Major State Environmental Literacy Partners:

- State Agencies to include: Department of Wildlife Resources, Department of Conservation Resources, Soil and Water Conservation, Department of Forestry, Chesapeake Bay Foundation, James River Association, Blandy Experimental Farm, State Arboretum, the Rice Center, etc.

FUNDING

Major State Funding Programs Supporting MWEE

- 2020-2021 Virginia Watershed Educational Programs Project (Issued by DCR; source of funding: Virginia General Fund)
- Grant programs exist that schools or divisions may compete for funds, to include:
 - Chesapeake Bay Restoration Grant
 - BWET grant
 - Dominion Energy Environmental Grants
 - Division education foundation grants

Active NOAA B-WET Grants

- *Virginia Institute of Marine Science (NA20NMF4570241) - Capacity building in five universities to support pre-service MWEE integration*
- *Elizabeth River Project (NA19NMF4570117) - Systemic MWEE Implementation in Chesapeake Public Schools*
- *Virginia Commonwealth University (NA19NMF4570081) - Systemic MWEE Implementation in Charles City County Public Schools, Colonial Heights Public Schools, and New Kent County Public Schools*
- *Blandy Experimental Farm, University of Virginia (NA18NMF4570315) - Systemic MWEE Implementation in Clarke County Public Schools*
- *The Nature Conservancy (NA18NMF4570274) - Systemic MWEE Implementation in Accomack County Public Schools and Northampton County Public Schools*
- *Maymont Foundation (NA18NMF4570275) - Systemic MWEE Implementation in Henrico County Public Schools*
- *Friends of the Rappahannock (NA18NMF4570311) - Systemic MWEE Implementation in Spotsylvania County Public Schools and Caroline County Public Schools*
- *Earth Force (NA18NMF4570273) - Systemic MWEE Implementation in Alexandria City Public Schools*
- *Culpeper Soil & Water Conservation District (NA18NMF4570272) - Systemic MWEE Implementation in Culpeper County Public Schools, Greene County Public Schools, Madison County Public Schools, Orange County Public Schools, and Rappahannock County Public Schools*

Other Major Funding (federal, private, etc.)

- EPA Environmental Education Grants
 - 2020:

- James River Association (\$98,000) - “Connecting High School Environmental Science Students to the James River”
- 2019:
 - Friends of the Rappahannock (\$100,000) - “A River Runs Through Us: Knowledge to Local Action (ARRTU)”
 - Lewis Ginter Botanical Garden (\$100,000) - “Cultivating Community Water Stewards”

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