

2023-2024 Virginia Watershed Educational Programs Project Virginia Department of Conservation and Recreation

Winchester Public Schools

The goal of this project was to improve academic performance in science by enhancing teacher's professional knowledge in designing and implementing authentic, hands-on, inquiry based science learning experiences and environmental education concepts. These learning experiences ensure that all students are engaged in Field-based Meaningful Watershed Educational Experiences (MWEE) in middle school that challenge students to explore environmental concerns and their own impact on the local watershed system. The program expanded opportunities for students to engage in environmental education that focuses on stewardship of the local watershed by allowing students to engage with and learn science in an authentic, real-world setting by enhancing the use of students' scientific and engineering practices.

All students in grade 6 science participated in a field experience investigating the quality of our local watershed through a stream study led by their teachers with the support of ODU staff and the division Science Supervisor. Prior to the field experience, 7 teachers spent a day with ODU staff to learn about MWEE investigations, hands-on water quality investigations, and ways to connect students to our local watershed. During this experience, teachers worked together to collect and analyze macroinvertebrates using leaf packs, tested the tributary water quality using test kits, and learned about the structure and expectations for meaningful watershed educational experiences.



130 students completed a site analysis, macroinvertebrate studies, and water quality studies of the Shenandoah River at the Shenandoah University Cool Spring Campus. All teachers involved in the PD supported the student investigations and had opportunities to interact with the students on the trip. The students were engaged, asked questions, and spoke of the things they learned on that trip to their teachers even weeks after the trip. One unexpected benefit of the trip was that our Hispanic multilingual students were able to teach other students the Spanish words for many of the organisms and abiotic features the students learned about on site.

Funds from this grant were used to provide professional learning support and to purchase seining nets, hand lenses for marine organism identification and classification, water quality test kits, and other supplies to implement stream studies as part of the curriculum. Out of this grant we were able to not only purchase enough equipment to support MWEE investigations at the middle school but at the high school as well. As a result of participating in the professional learning, the high school environmental science and biology teachers have made changes in their current curriculum. The environmental science teachers ended this year with an action project with their students where they planted trees and helped remove invasive species at their school campus, visited the local water treatment plant to learn more about water conservation, and finally had a visit with an environmental lawyer to learn more about our local environmental issues.