

The Results of Longitudinal Water Quality Monitoring of the Brandywine River, Chester County, Pennsylvania by High School Students

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Abstract : Strengthening a sense of responsibility while relating global sustainability concepts such as water quality and pollution to a local water system can be achieved by teaching students to conduct and interpret water quality monitoring tests. When students conduct their own research, they become better stewards of the environment. Providing outdoor learning and place-based opportunities for students helps connect them to the natural world. By conducting stream studies and collecting data, students are able to better understand how the natural environment is a place where everything is connected. Students have been collecting physical, chemical and biological data along the West and East Branches of the Brandywine River, in Pennsylvania for over ten years. The stream studies are part of the advanced placement environmental science and aquatic science courses that are offered as electives to juniors and seniors at the Downingtown High School West Campus in Downingtown, Pennsylvania. Physical data collected includes: temperature, turbidity, width, depth, velocity, and volume of flow or discharge. The chemical tests conducted are: dissolved oxygen, carbon dioxide, pH, nitrates, alkalinity and phosphates. Macroinvertebrates are collected with a kick net, identified and then released. Students collect the data from several locations while traveling by canoe. In the classroom, students prepare a water quality data analysis and interpretation report based on their collected data. The summary of the results from longitudinal water quality data collection by students, as well as the strengths and weaknesses of student data collection will be presented.

Keywords : place-based, student data collection, sustainability, water quality monitoring

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