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Investigating microplastics in your local waterways

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Many introductory courses are working to incorporate authentic research experiences throughout the freshmen year. Ecology is an important topic covered in introductory biology courses, but many students are on the pre-med track, and struggle to find the relevance with their future career goals. Integrating current events and news into coursework is a great way to demonstrate this relevance. I designed an authentic laboratory experience to enable students to study microplastics in the local waterways in Delaware. I found that students were more engaged in the discussions on ecology and worked to try to reduce plastics in their own lives after completing this laboratory module. During this multi-week laboratory experience, students investigate the molecular structure, density of plastics, and how plastics are broken down. They then research how the microplastics interact with the local food web. Next, students go into the field to collect water samples, retrieve the microplastic samplers, and describe the riparian zone, impervious surfaces, and possible sources of plastic. Once back at the laboratory, they separate the microplastics from the organisms, identify and count the organisms and microplastics, graph their findings, and present their findings through a poster presentation. Throughout this laboratory module, the students are learning about the microplastic research being conducted at the university and in one instance comparing their findings to those in the literature. Participants in the workshop will 1) investigate samples that include preserved organisms and microplastics, 2) graph their findings and connect them using a system model, 3) discuss the different sampling methods for collecting microplastics, 4) review the literature to learn of existing local research on microplastics, and 5) begin thinking about how they could incorporate microplastics into their own laboratory courses. This could help you begin developing your own authentic research experience regarding microplastics.

Keywords: Microplastics, waterway, authentic research

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