Abstract: Brooklyn College GK-12 ‘City-as-Lab’ program turned Brooklyn, a city of neighborhoods and diverse culture, into the richest of science classrooms. GK-12 Fellows, students, and teachers collaborate on place- and inquiry-based educational projects in high-school classrooms. Fellows foster an understanding of complex ecological and social issues existing in the students’ neighborhoods while simultaneously developing their own leadership and communication skills as scientific researchers. Students design and implement experimental projects, use GIS programs to strengthen their spatial orientation skills, and present their findings to their communities. Multiple databases have been collectively generated while simultaneously achieving program goals.

Science, Technology, and Research Early College High School (STAR)
Projects: Characterization, pH, and fertility of soils
Class: Earth Science Regents, Grades 9-12
Methods: Prospect Park serves as a nearby, accessible laboratory for hands-on investigation of natural processes in the urban environment of Flatbush, Brooklyn. Furthermore, research in the park reinforces STAR’s vision to foster a new generation of engaged scientists by invigorating the New York Earth Science curriculum, making Earth Science topics more interesting and relevant to students’ lives.

Results: Students are significantly more optimistic with regard to their ability to help solve the air pollution problem than are the Brooklyn 9th Grade Living Environment students attending Brooklyn College, who are older and have higher levels of education. Preliminary analysis reveals that the ITAVA mean responses; higher bars indicate greater levels of agreement.

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City-as-Lab: Using Brooklyn’s Urban Spaces to Enact Place-Based Environmental Science Studies

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Brooklyn Academy for Science and the Environment (BASE)
Projects: Water Quality Testing at Newtown Creek, a 3.5 mile estuary separating the boroughs of Queens and Brooklyn considered one of the countries most polluted bodies of water.
Class: 11th Grade Urban Ecology and Urban Geography
Methods: Working in two elective classes, students are learning about environmental issues and the history behind these issues that affect the health, well being and political decision making within their communities. In the classroom, students learn about water quality of the New York City area and water testing techniques, and in the field, students construct their own overview of the current water conditions of Newtown Creek and compare these results to previous years' work.

Results: The data collected by the students show that the current year's test location is substantially healthier than that of the work done the prior year. Students are identifying the differences in localities from their site, near the mouth of the East River, compared to the prior design's site, a land-locked locality with no tidal inflow. Students are drawing connections between the results and geographic differences in order to make accurate predictions of levels of pollution throughout the creek's system.

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Teach er Preparatory School
Projects: To identify hazards that exist in the air of their school, home and places of recreation.
Class: 9th Grade Living Environment
Methods: Students are resecting pollutants and other substances that could exist in air and what specific pollutants are associated with each location. Using a combination of pre-purchased kits and homemade "detectors", students are testing their air for ozone, particulates, organics, and hazardous vapors.

Results: Students identify differences between particulate samples from different locations in Brooklyn, micro-photographed their detectors, and graphed their data. Ozone counts have been low for all areas tested. Students have identified several bacterial and fungal colonies that could have an adverse affect on health in their classrooms. Potentially dangerous levels of Carbon monoxide have been measured. Further investigation is required and being performed by the 12th grade students.

Brooklyn College - City University of New York