Cleaner Air, Tree by Tree:
Investigations Summary

Program Description: This series of investigations will address the DCPS Grade 5, Advisory 4 “Human vs. Earth: Conservation.” Students explore how the four spheres interact and how human activity impacts all of them. Using their school grounds as a laboratory, students will collect air pollution data and make tree observations. With the observation and air pollution data in hand, students will use online modeling and deductive reasoning to make recommendations to minimize human impact on their school grounds.

Introduction: (Teacher-led) Instruction begins with the ELA teacher leading a guided close reading of the Franck Prevot book, Wangari Maathai: The Woman Who Planted Millions of Trees about Nobel peace prize winner and environmental role model, Wangari Maathai. Teachers will be provided with a class set of books as well as a pre-visit shared reading lesson plan developed by a DCPS ELA LEAP teacher.

Investigation 1: (Co-taught, in-class) Students reexamine earth’s major systems and how the four spheres interact with one another through a student-inquiry driven activity. Students discover the composition of air and classify sources of air pollution as anthropogenic or natural. Students learn that polluted air can cause harmful respiratory and cardiac issues, including asthma. Investigation 1 concludes with a classroom test using AirBeams and students fill out the data table in their workbooks. Following the Scientific Method, students develop hypotheses about how humans have changed their school grounds and how human impact has changed air quality in their community.

Investigation 2: (Co-taught, outdoors) Students divide into two groups and begin with either Casey Trees or Clean Air Partners. With Clean Air Partners, students measure and record ozone and particulate matter pollution at three different sites on their campus while discussing potential sources and causes of air pollution. With Casey Trees, students compare and contrast natural and planted spaces to observe how humans have changed their school and their neighborhood. Students make observations and recognize that measurements such as diameter at breast height and tree health and sun exposure are indicators of tree health and growth.

District of Columbia Environmental Education Consortium’s (DCEEC) members, Clean Air Partners and Casey Trees are collaborating to provide Cleaner Air, Tree by Tree a series of four investigations for 5th graders that address DCPS Advisory 4 Human Impacts on Earth Systems.
Investigation 3: (Co-taught, in-class) Students use iTree Design to model planting trees of different species on their campus. They analyze and interpret data to quantify the benefits that the trees have on the environment as it relates to stormwater, energy, air quality and carbon dioxide and how trees can be planted to mitigate some of these effects. Using their observations from Investigation 2, students draw conclusions about how different species of trees provide different benefits. This data analysis reveals how human activities in everyday life have had major effects on the land, vegetation, streams, oceans and most specifically air and that individuals and communities are taking action to help protect earth’s resources. Students engage in argument from evidence to make recommendations on how to improve human impact on their school grounds.

Tree Planting or Tree Care day (outdoors) Schools that meet planting space criteria can involve students in a tree planting event on their campus as a tangible contribution to environmental efforts they investigated throughout the week. Planting plans are crafted by Casey Trees Urban Foresters and trees are donated by Casey Trees. Schools without sufficient space to plant can instead choose to conduct a hands-on tree care day, in which students water, mulch, and learn about how to care for the urban forest.