

VISIONMAKER MODULE 3: INTRODUCTION AND BACKGROUND INFORMATION FOR TEACHERS

Module 3 focuses on the carbon EPI. For the purposes of the Visionmaker website, the carbon EPI represents the varying ways in which the carbon cycle performs environmentally within an urban context. Carbon parameters include input measures (such as plant growth, foods eaten, and fuels consumed), stored carbon measures (such as standing and fallen biomass), and output measures (such as plant senescence, greenhouse gases, and wastes). For the purpose of the sample lessons, we are exploring ways in which carbon has various “costs” associated with our lifestyles and everyday choices. The main focus will be on understanding CO₂ output and the social, political, and environmental effects on our urban surroundings. Throughout the unit, students will be working towards understanding how to reduce greenhouse gas emissions in both everyday choices and urban planning.

In Lesson 1, students will work towards gaining an understanding of the scale of carbon usage during everyday activities (i.e. doing the laundry, driving a car, heating a home, etc.). They will rank activities in relation to assumed carbon output. This activity is designed to increase environmental awareness amongst students, empowering them to understand that their individual actions can lessen or worsen greenhouse gas emissions. Students will then explore the impact of collective lifestyle behaviors on carbon output through Visionmaker. Finally, students will create a model of a football field to visualize the scale and magnitude of CO₂ output that results from our lifestyle choices. They will convert units of measurement to give CO₂ a physical presence that students can see and grasp within a real-life context.

In Lesson 2, students will explore the economics of carbon emissions. Using math skills such as creating algebraic equations and proportions, students will calculate the social carbon cost of CO₂ emissions across different lifestyles within Visionmaker. Students will be able to use data to discuss environmental and societal tradeoffs as it relates to carbon and its potential impacts on urban residents. Utilizing the challenge function on Visionmaker, students will then modify visions on the website in attempts to reduce greenhouse gas emissions in an urban setting through informed, purposeful decisions that align with the OneNYC initiative. Lastly, students will engage in a whole-class formal debate about the best strategies of greenhouse gas reduction: prevention vs. sequestration.

Throughout these lessons, students will realize the individual and collective behavioral possibilities that can contribute to reducing CO₂ emissions. All of our actions/choices have costs associated with them, so how can we contribute to a greener NYC? Students will explore mathematic skills, such as measurement conversions, algebraic equations, and proportions by examining real-world data from other scientists. They will also work on interpreting this data to create credible scientific explanations that they will use to argue and defend their stances on best strategies for carbon reduction.