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An Integrated & Inquiry-based Approach to Exploring Plant Metabolism

John S. Peters

College of Charleston, Biology, 66 George St, Charleston SC 29424 USA
(**PetersJ@cofc.edu**)

Many introductory biology textbooks, and consequently classes, largely teach photosynthesis and cellular respiration as separate metabolic processes. The consequence is that students often fail to understand the important connections between these metabolic processes within plants, leading to the common misconception that "animals do respiration, and plants do photosynthesis". This workshop went outside to explore these connections. We used carbon dioxide gas sensors to estimate leaf NPP, and using more student-directed learning approaches, developed procedures for estimating GPP and respiratory rates. Ideally, this lab sets the methodological and observational context for a student-directed inquiry-based independent project in which students explore questions related to how genetic, developmental, or environmental factors influence leaf metabolism and therefore productivity. This workshop discussed ways to structure this independent project to encourage collaboration and foster scientific intellectual skills, and a general spirit of scientific inquiry. At the end you will be 'ABLE' (sorry I couldn't help myself) to explore an entire introductory biology curriculum, which uses an inquiry-based learning framework.

Keywords: photosynthesis, cellular respiration, leaf metabolism, inquiry learning

Mission, Review Process & Disclaimer

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