

Designing Effective Introductory Biology Labs: Part II – Fostering Scientific Intellectual Competencies and Attitudes

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The goal of most traditional science labs is to confirm or reinforce understanding of concepts or processes, and it is usually those very abstract concepts, which serve as the context for the lab exploration. Although these labs use scientific methods, they often prompt students to follow an explicit set of instructions, which should yield a preplanned outcome. Because the context of the lab is often quite abstract to the learner, students often mindlessly follow these instructions and attempt to interpret the findings by answering questions provided to them at the end of the lab. For students, these lab experiences can be more akin to blindly following a cookbook recipe, and like a recipe, is often thought to have failed if the expected results don't materialize. These highly guided and largely concept-focused labs do little to help students become more comfortable with the question-driven, dynamic and tentative nature of science; appreciate why we should trust scientific knowledge; value basic scientific knowledge and its connections to issues that will confront them in their personal and civic lives, and provide an authentic science experience which helps them to make decisions about how they would like to interact with science in their future professional lives? In this hands-on workshop, participants will be engaged in labs and associated pedagogies that foster the development of intellectual skills, and attitudes that are so important to both science literacy and valuing the spirit of scientific inquiry. At the end of the workshop, participants will be able to examine the inquiry-based lab approach utilized in our large-enrollment introductory biology labs along with samples of instructional resources provided to our graduate (Masters-level) teaching assistants. (Note: you need not have attended the Part I workshop to attend this one, and you are welcome to come to both.)

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