Moving the Prelab Out of the Laboratory

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Abstract of Workshop

Laboratory exercises in introductory biology are often characterized by having detailed and time-consuming prelab instruction given by the lab instructor (in our case, graduate teaching assistants). We found that our lab instructors were spending an average of 40 minutes per lab session introducing important conceptual basics and giving detailed procedures. In order to better utilize lab time (that is, provide more time for the hands-on activities that we value in labs and the guided critical thinking), we have attempted to replace much of the talk time with on-line prelab homework assignments. We use an open-source learning management system called LON-CAPA which, as one of its strengths, provides the capability for highly individualized homework problem sets with extensive controls, record keeping, and analysis of student responses. Students complete prelab homework assignments online before coming to lab. Assignments variably include such aspects as basic concepts, experimental design, practice data collection, review of specific protocols and making predictions about experimental outcomes. After two years using these prelab assignments, we can observe two major outcomes: 1) students come to lab sessions better prepared and 2) the lab instructors prelab talk time has been reduced to approximately twenty-five minutes. In addition, thanks to the analytical functions of the system, we can readily assess the students learning and obtain advance insight into potential misconceptions so that the instructor can prepare to address them during the lab session. The students work hard to solve the problems in order to earn the assigned points. We continue to refine and expand our library of online resources available for both pre- and post-lab exercises. The LON-CAPA platform provides built-in sharing mechanisms such that our resources are freely shared and available to the larger LON-CAPA community (currently 33 colleges, universities, and high schools). In this Mini Workshop, you will have the opportunity to be a student in our course and to experience the individualized prelab and postlab homework assignments. You will also be introduced to the shared resource library of LON-CAPA and how LON-CAPA can be used as a course management system