

AC 2008-441: LONG ON STUDENTS AND SHORT ON EQUIPMENT: AN EFFECTIVE AND WELL RECEIVED METHOD TO IMPROVE LABORATORY OUTCOMES

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Long On Students and Short On Equipment: An Effective and Well Received Method to Improve Laboratory Outcomes Given Laboratory Equipment Constraints

Abstract

Colleges and universities experience temporary increases in student populations for many reasons, such as changes in local population demographics or the popularity of specific majors. These periods of high enrollment do not always justify expansion of laboratory assets such as construction of new workstations, purchase of new test equipment, or the addition of laboratory sessions. The result often is overcrowded laboratory sessions with oversized laboratory teams wherein students are at risk of not experiencing the quality or breadth of 'hands on' laboratory involvement considered necessary to meet even minimum outcomes requirements. Moreover, the instructor often feels significant stress attempting to give each student in each assignment the time required for thorough evaluation and useful comment to the student.

To overcome these obstacles and to maintain good laboratory outcomes during times of laboratory equipment constraints, the author has developed an innovative method to assure that each student is given adequate opportunity to learn, and that the instructor has ample time to assess and report learning progress and outcomes. Briefly, the method includes segmenting common or repeating laboratory procedures into specific tasks, such as, for example, preparation and construction, experimentation and data gathering, and analysis and conclusion. The number of tasks is equal to the number of members in the assigned laboratory team. During a laboratory assignment, each team member takes as his or her role responsibility for the team's completion of one of the segmented tasks. For every new laboratory assignment, the team member roles are rotated among the segmented tasks. A single team-authored laboratory report is submitted for each laboratory assignment.

This effective and well received role-rotation method is described in detail and successful results of its implementation are presented.