

Laboratory Instruction

In former years the assignment of laboratory instruction to the newer younger members of a faculty was widely practiced. It was done in a generally good-humored manner, the young faculty man realizing that such instruction was the first rung on the ladder. Indeed, it was practically a ticket of admission to the profession of engineering teaching. The general atmosphere of goodwill was usually enhanced by the obvious relief of that faculty man just graduated from the laboratory assignment. But with the increasing pressures now being put on young instructors to produce quickly an abundance of original and scholarly work, they must be free to develop their research interests and capabilities, to direct graduate students, and of course to write. The practice of assigning such men to laboratory instruction should be stopped; probably it was not the best practice in the first place.

The ones who should be charged with laboratory instruction are the senior people. They have the experience and maturity to do it well; all they lack, in many cases, is the interest. This interest could be enhanced, however, if these senior people will reconsider how useful and important the laboratory can be. A student may read and do problems and cogitate as much as he pleases, but full comprehension of an engineering matter comes best through a combination of thought and practice. The operation of equipment, the manipulation of controls, the observation of instruments, and the recording of data impart an understanding not otherwise possible. The student will learn that some instruments yield erroneous readings, that some sampling devices alter the sample, that the neglect of heat losses may often be unwise, that some practices are safe and some unsafe. He will learn to have a healthy skepticism about data. The student can also learn best in the laboratory about error and error propagation. Theoretical calculations on this subject remain pure exercises until the student makes observations of component and cumulative errors and can find for himself that the compounding of individual errors is real and measurable.

Report writing is, of course, one of the best opportunities for the instructor to measure the student's comprehension. The short laboratory report is a fine introduction to the sort of technical report which is an everyday requirement in industry. The criticism of such efforts is often a dull business, but a comparison between the last and the first reports written by a particular student is most rewarding. Conciseness, pertinence, and accuracy in writing can be taught if their absence is detected and criticized frequently enough.

Senior faculty people should welcome the challenge of laboratory instruction as an opportunity for meaningful teaching.

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