

Breakout session on “How to build communities of practise on teaching within physics departments”

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Breakout room 1: evaluating your lab course.

Initial introductions and how do you currently evaluate your lab course?

1. Question about what is evaluation? Two aspects:
 1. evaluating students (providing students with grades)
 2. evaluating the course (is it achieving the learning goals?)
2. Evaluating students (a sample of responses - most were some combination of the first two):
 1. Lab notebooks - specific rubrics/assessment criteria/scaffolding to explain what is expected of students. (Students, at least initially, don't really know the purpose of a lab notebook!)
 2. Lab reports - recognition that this is a complex task, and some degree of chunking of the different aspects so that students can revise and improve their work.
 3. Vivas.
 4. Data retrieval tests - to find data from students' own notebooks.
3. Evaluating the course:
 1. Most reported using student feedback/questionnaires at the end of the course and discussion of the value of that (optional, students venting).
 2. This is an opportunity to think about what we are trying to achieve in labs, rather than just something that we have to do.
 3. Discussion of course assessment measures aligned with learning goals of the course, e.g. E-CLASS, MAPLE, and SPRUCE all produced by the team at CU Boulder specifically to measure: student attitudes, beliefs and epistemologies about labs/experimental physics; modelling proficiency; and conceptual understanding of measurement uncertainty, respectively. Rather than eliciting open-response feedback from students, they ask multiple choice questions to students on specific questions e.g. one question from E-CLASS: "What do YOU think when doing experiments for class [about the statement]: The primary purpose of doing a physics experiment is to confirm previously known results" and students decide whether they agree/disagree with that statement.
 4. These surveys are repeated before and after instruction (usually for some course credit) to track changes in student responses and thus determine the effect of the course on students' understanding/beliefs depending on which specific survey.
 5. The purpose of these surveys is to provide formative feedback for the instructor, and can be used to measure the effectiveness of changes that instructors make to courses - and thus be used as evidence to support and guide improvements to courses. They are not used to grade students or instructors.
 6. More info can be found
here: <https://jila.colorado.edu/lewandowski/research/physics-education-research>
 7. Other assessments (not just for labs) are available
here: <https://sites.google.com/view/laa-resources/assessment-research-and-results/lasso-available-instruments>
4. We finished with a brief discussion on electronic lab notebooks vs. paper notebooks and how to deal with the logistics in a covid friendly way in an in-person lab. It depends on the lab/year group and what needs to be used from the lab book to evaluate the students. Scan paper copies and send in.

