

PRACTICAL EXAMINATIONS IN SCIENCE LABORATORY CLASSES: FOSSILS FROM THE PAST OR ASSESSMENT TOOLS OF THE FUTURE?

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ABSTRACT

Practical examinations in science laboratory classes have gone in and out of fashion over the decades. The recent focus on graduate skills has revived interest in this assessment instrument. However, it is clear that in the current context of large laboratory classes, great diversity in student background and interests and very limited time and resources the role and format of practical examination needs to be re-examined.

In this ideas exchange I will present a brief overview of different models, some in use at our institution and some described in the literature, in order to discuss their value, suitability and potential in laboratory education. In particular, I would like to explore in this group how the academic requirement for rigorous summative assessment might be reconciled with a positive student experience.

THE ISSUE

Practical classes should do more than just illustrate concepts and test understanding: students should learn, among other things, how to design and safely conduct experiments, how to effectively measure and observe, how to record and analyse data and communicate results. Current laboratory assessment tasks – typically laboratory reports – do not adequately capture these skills and often contribute to a student perception of laboratory tasks as repetitive and laborious. Instead, different learning aspects should be assessed using a variety of assessment types. Can practical examinations be a suitable instrument? If so, what form should they take and how can they be integrated into a lab program that inspires and motivates students?

THE APPROACH

In our laboratory classes, practical examinations have been 'piloted' for the last three years to test students' ability to independently conduct an 'experiment' using techniques they have learned during the semester. Student marks include a results component and a demonstrator observation component. The practical exam is incorporated into the program as a culmination point that 'certifies' that students have reached a level of proficiency.

Student feedback indicated that prac exams can have a reaffirming and empowering effect on some students, but others felt very stressed or questioned the relevance or fairness of the exam conditions. A review of the current practical examinations will aim to make them more reliable, clarify conditions and learning goals for students and to make the tasks more (workplace-) relevant.

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