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Dear Lindsay:

Thank you for inviting me to review your classroom on November 6, 2017 as part of the Certificate for Innovation in College Teaching at Portland State University. Your commitment to better teaching practices is already notable in the efforts you take to be an integral part of this new program and in your thoughtful teaching methodologies.

It is evident in watching you teach that you have had several years of teaching labs at PSU. You seemed comfortable with and knowledgeable of the material, even in a complex lab. I liked your use of specific objects from their tables to demonstrate their use, like the pipettors and reagents. The quiz was a reasonable difficulty for this lab and I liked the immediate quiz review; this is a really good way to make sure they are well prepared for the lab ahead!

I did notice some areas for improvement in the lab on my day of attendance. Most of these issues had to do with student participation. Student attention during the lecture portion dropped significantly. Although the lab was complex, the background material was still quite long; several students were using computers and not watching you. Moving around the room when reaching for demo items stirred them a bit, so maybe more direct demonstrations of key concepts. There were many new techniques to address; is it possible to introduce them earlier in the term, in prelab videos, or by simplifying them? For instance, instead of using formal pipettors, it might be better to use the "crayon" preset pipettors for the first week to introduce the concept. Asking tables of students questions instead of the room might keep them on their toes. I noticed that they did much better answering a second question than a first, which shows they were not actively listening until they were prompted to respond. In a couple spots, students did try to answer but the time given was short and they didn't get a chance. Encouraging notetaking and printing off lecture slides in advance might help, as would leaving blanks in the notes that would require the students to pay attention to fill out. I think

you did an excellent job with the material, but with so many new concepts in particular, it can be a challenge to find ways to engage students.

There were a few other minor areas for improvement in the lab. The ambient noise in the room was quite high, making hearing difficult: empty shakers on, connected classroom doors open, the air vents on full blast. It might be beneficial to turn off machines and vents not in use and to close doors to reduce noise. It was also the students' first week with fire and gas safety; the position of the information in the lecture made it so many students looked confused, and there were some very big potentials for danger, with loose clothing and hair being chief amongst them. It might help to do the lecture portion, and then do 1 complete demo on the plate instead of breaking it up into smaller chunks: how to label, fire safety, how to pipette. Back and forth seemed to confuse many of them. The students began the activity at 11:30. At 11:50, about $\frac{3}{4}$ of the students were actively pipetting and engaging in the plan, but $\frac{1}{4}$ still looked very lost. I liked how you tested their pipetting skills and thought this was an excellent checkpoint, but maybe to expedite, hosting one table at a time at the center table to demonstrate instead of individually would have allowed you to reach the particularly confused students faster.

Although the list of improvements seems long, it is mostly for detailed assessment and to provide potential alternatives in future labs. Overall, I thought you had excellent rapport with your students, who were clearly engaged with the activity even with as many complex moving parts as that week's lab had. Your use of demonstrations and individual check ins show the students that you are versed in the lab's methodology and help establish you as a trusted guide. Thank you again for the opportunity observe you and reflect on student engagement!

Sincerely,

Jessica F. Hebert