Dr Phoebe Stavride



Dr Phoebe Stavride Talks About Virtual Labs And Breeding Dragons!

During the pandemic, virtual labs gained popularity, mostly as a replacement for the physical labs ("wet" labs). The Human Biology Programme adopted Labster's virtual labs, mostly because they require zero training to use, but also because of the collection of titles available.

But what is a virtual lab? A virtual lab is a computer simulation that allows a student to reproduce an experimental protocol on-screen. Like computer games, virtual labs can look and feel quite different, though most have a linear "storyline" that follows a specific protocol step-by-step. Here (https://bit.ly/3D2woJz) is an example of an excellent virtual lab produced by a collaboration between universities; though the graphics are simple, running the lab should leave a student with an understanding of the Gram staining technique that is en par with what they would get from the traditional labs.

While the term "virtual lab" is used rather loosely by content creators, to me it is important that the student is applying their knowledge to successfully complete the simulation, rather than simply clicking through it (compare Chapter 4 vs. Chapter 5 in the virtual lab above). There are different ways to accomplish this. Labster, for example, pauses the simulation to ask questions; other laboratories may fail, or even blow up when the student makes mistakes! Similarly, when choosing a virtual lab title, an instructor should consider their lab session's learning objectives and select a simulation that matches them, rather than one matching the experimental protocol itself. For example, in one of my labs we use corn to study Mendelian genetics. When we were forced to run the lab session online, I had my students breed dragons instead; not only did they understand genetics equally well, but there were actually a few students that were still working on them (covering extra material) an hour after our lesson (dragons are, after all, more fun than corn)!

And while virtual labs gained popularity as a replacement for web labs, the best way to use them is probably alongside them. A virtual lab can be assigned as preparation for the actual experiment, eliminating the need for lengthy explanations during the lab session and reducing experimental mistakes, thus saving time. This was also useful during the pandemic, as it allowed us to isolate the physical skills from the background/results analysis, and combine them to be covered during the precious few face-to-face lab sessions. A virtual lab can also be run during the real one, to allow the students to "look" at what is happening inside their test tubes – long waiting times are common in experimental biology and make for an excellent time for that. Or it could be run after, when an experiment is too lengthy to be completed or even to test the students' knowledge, if the virtual lab has some form of assessment built in it.

What's certain is that virtual labs are not just a solution in a time of need, but a powerful education tool. Bringing them into the spotlight was perhaps a silver lining in the difficult times we are going through. In our Programme they were well received by both colleagues and our students, and I'm optimistic they are here to stay!