

Forum for Microbiology Education **Workshop Abstracts**

Monday, June 18th, 2018
1:00 – 4:30 PM

Hands-on workshop

Practical ways to develop and use active and engaging activities in your classes or labs

Tanya NOEL, University of Windsor, Windsor, ON and Josie LIBERTUCCI, University of Michigan, Ann Arbor, MI

Active learning has been shown to help engage and develop high-quality learning in students, as seen in a growing body of literature and the increasing number of resources and tools available. This is valuable for instructors wanting to bring new and effective activities into their teaching, but it can be challenging (or even overwhelming) to choose and start using these activities in our classrooms and teaching laboratories. For instructors who have been using active learning techniques, there are also challenges in keeping things fresh, and evaluating how well the approaches are working.

In this workshop, we will explore practical strategies for bringing in (or updating) relevant methods for participants' own Microbiology (or Biology) classes/laboratories. Some common active learning techniques (and tools that can support them) will be demonstrated, with discussion of advantages and disadvantages. Participants will be introduced to some ways in which to develop or find, and to integrate new (or revised) activities into classes/laboratory exercises for their courses, and will create their own plans for a class lecture or lab exercise.

Ahead of the workshop, please think about a particular lesson/lecture topic that you would like to revise/include in your course or laboratory. (If you do not have an upcoming course, consider topics you'd be interested in teaching in future.)

MicroFOME sessions:

Using common read to facilitate common interest: Strategies for engaging small, medium, and large size biology classes in book discussions

Anni MOORE and Matthew NIELAND, Morningside College, Sioux City, IA

Interest in any topic is best facilitated when students can connect the material to exciting real life scenarios. In order to enhance the connection between classroom material and its applications, we have explored the strategies for incorporating popular science books as required supplemental reading for microbiology, immunology, and epidemiology courses. The class sizes have ranged from 7 students in Food and Water Microbiology, to 25 in Immunology and Epidemiology, and to 70 in general Microbiology. From the teaching perspective, these books have served as a great reference material to use as examples to illustrate relevant points throughout the lecture and lab. From student perspective, the book reading has not only enhanced the classroom participation and comprehension of the material, but also understanding of the wider

issues in science that reach far beyond the current course. In this workshop session we will explore various strategies for different class sizes to enhance the in-class book discussion participation, including the size of discussion groups, the use of case studies, drawing parallels to current events, creating infographics based on the readings, and involving students in leading the discussion groups.

“My Favourite Microbe” – A creative assignment for exploring microbial diversity

Nicole SUKDEO and Keith N. EGGER, University of Northern British Columbia, Natural Resources and Environmental Studies Institute, Prince George, BC

The microbial diversity sections of introductory microbiology courses are often delivered as a lecture-based survey of phyla that can be encyclopedic in format, and overlooks opportunities for students to self-direct their learning about different microorganisms. Dr. Keith Egger devised an assignment called “My Favourite Microbe,” which offers students opportunities to present a short report on a microorganism of their choice. This assignment has been deployed in Dr. Egger’s Microbiology curriculum for several years at UNBC. In this assignment students are required to summarize nutritional, habitat, and taxonomic information about the organism, and effectively summarize a research paper, AND they are encouraged to be creative in their visual or text-based presentation of the material. Equal opportunities for student success in this assignment that do not rely on artistic ability are provided by use of a grading rubric that focuses on inclusion of content they should be able to identify to assemble the report. A peer evaluation component is also implemented as part of the assignment so students can learn more about microbial diversity, reward originality in project design, and foster motivation for creative project design. In this presentation I will emphasize that the My Favourite Microbe assignment offers a chance for students to be recognized for demonstrating an understanding of microbial characteristics and for using their creative abilities in developing the final product. I have used this assignment in my own teaching of Microbiology at UNBC and will reflect on this experience as well.

Tips on designing online courses in biology

Jessica HILL, University of Toronto, Toronto, ON

Online courses are becoming increasingly popular in higher education. With the unique opportunities and challenges online learning provides, online study necessitates an adjustment from traditional teaching practices. At the University of Toronto in the Department of Molecular Genetics, two large, asynchronous (i.e., no requirement to be online at a particular time) online courses have recently been developed, “Introduction to Medical Microbiology” and “Introduction to Medical Genetics”. In this session, I will discuss how these courses have been designed guided by cognitive load theory and how the courses are implemented. Strategies to make online, asynchronous courses in biology a better learning experience for students will be shared. Attendees should come away from this session with an appreciation of cognitive load theory’s application to online courses, suggestions for increasing student engagement in online courses and a list of tools that can be applied in online, asynchronous courses.