2015 ASM M(icro)OOC #3:
Lesson Plan Design Using the ASM Curriculum Guidelines
April 22, 2015
Frequently Asked Questions

Mary Allen, Hartwick College (Purple answers)
Michelle Furlong, Clayton State University (Green answers)
Kelly Gull, American Society for Microbiology Headquarters (Blue answers)

Participant questions

1) Do you use active learning techniques every class period? What is the active learning technique that you use most often (is it clickers?)?

MF: I do not use active learning activities every class period. I use it when we approach a topic that is typically challenging for the students. I would estimate that I incorporate an active learning activity in lecture about every other week (on average). I try to incorporate clicker questions (for formative assessment) in every lecture period. In lab, I have changed most of my labs to inquiry based methods (versus following a cookbook lab procedure). I am working on revamping my Gram Stain and Streak Plate labs so they are more inquiry-based and rich with active learning.

MA: I do use active learning nearly every class period (I am flipping my classes, one at a time) but reached this point gradually. I started using active learning part of one class periodically and worked up to my current comfort level. In my experience it gets easier, even natural, with practice and a little active learning in the classroom is better for our students than none! Most often I have students complete in-class work they hand in at the end for grading. They work in groups of 3-4 so in a class of 30 that cuts the grading load by 1/3. I use activities like those highlighted in our presentation and also summaries of scientific abstracts, problem-sets (e.g. microbial growth problems), chapter review questions, etc.

2) Do you find that students have trouble understanding the NADH from glycolysis enters oxidative phosphorylation (as they are not linked on the card)?

MA: Yes. Consequently I would supplement the activity with follow-up critical thinking questions that address that particular process, for example “Explain why ATP production would stop if the reduction of NAD during glycolysis was prevented.” Students should be better able to answer this question b/c they have already gained (from the activity) a better understanding of the metabolic pathway as a whole. Now they are better situated to consider the critical nuances.
3) What would be your recommendation to actively engage students in an online course?

MA: I am only beginning to develop online courses and have not yet taught one. However there are many tools available, including blogs, voice-over programs, animations, etc. It was suggested to me in an online teaching workshop to pick a few favorites and learn how to use them well. A Google search can help with finding various resources.

KG: Keep in mind that we modeled good pedagogy for you during the webinar by using interactive polls and questions. You can use all sorts of questions for interactive polls, such as reflection questions, questions about content, or short essay (1-2 sentence) questions.

4) How receptive were your students to you when you first introduced active learning? Did they grumble and prefer to take notes because that is what they are used to?

MF: AT first it was mixed. I was new at doing it and they figured that out right away. At that point in time some still loved it, but others grumbled. Over time I experienced more students (actually most students) really appreciate it. I am much more experienced now so that helps. My advice would be to not let a few initial gripes discourage you and recognize you will always have a few students who will never enjoy it, but will participate if you encourage them to do so.

MA: Michelle’s answer also reflects my experiences. Following advice shared by many experience active learning instructors I have begun to share with my students the data on active learning that is in our presentation. Hopefully this helps them recognize that active learning is not for me (although I find it much more fun than lecturing), but about improving their learning and success. I also try to find ways to hold everyone accountable for arriving in class prepared and for completing the in class activities. This adds weight to their significance, which means students take them seriously, which improves “buy-in.”

5) When you use clickers, do you track individual responses for accuracy and grading?

MF: I do not. My purpose of using it is to make sure they are getting it and to get feedback on effectiveness of the lessons. I am afraid if there were stakes involved (i.e. counted in their grade) they may be tempted to cheat by asking the student next to him/her their answer or desperately flipping through the book/notes to find an answer.

6) Comment from the audience: There is a caveat to using various forms of commercial clicker technology. You should read the terms and conditions because sometimes the instructor and institution may be liable.

MF: I think this comes in to play when the companies collect your data and store it in a database and when there are identifying factors for each student (names and/or IDs). This would be a
FERPA violation. You do have to look out for this. We have an office of Instructional Development on our campus who guides us on what teaching technology we can use without making us liable.

MA: This may also refer to my statement that to save students money the clickers they purchase for one class can be used in another semester so they only have to make the purchase once. This has worked at our institution only in successive classes an access code must be purchased by the instructor. Usually this fee is less than $100.

7) Will this topic be continued at ASMCUE?

KG: Absolutely. The Guidelines are a foundation of the conference. ASM is committed to not only disseminating these guidelines and learning outcomes but in also providing the necessary tools and ideas for implementing them in the classroom. In fact, all conference abstract presenters must identify the core concepts addressed in the abstract and presentations are listed in the final program by these selections.

8) Does ASM have virtual labs available?

KG: Currently, no. There are many hands-on activities in microbelibrary.org and in JMBE. This is probably the best site with virtual labs for educators – The Virtual Lab Series by HHMI: http://www.hhmi.org/biointeractive/virtual-lab-series