Prep for “Engaging Students Through Interactive Lessons”

Prior to the session, please do all required reading and viewing.

**Required Reading**
The Torch or the Firehose: A Guide for Teaching Assistants

- **Section 1: The Glass Wall: Encouraging Interaction**
- **Section 2: Questions: Theirs and Yours**
- **Section 3: Before You Walk In…**
- **Section 4: A Word About Pedagogy**
- **Section 5: In the Classroom**
- **Section 6: Getting Off to a Good Start**
- **Section 7: Basic Communication Skills**
- **Section 8: Seeing is Understanding: Using the Blackboard**

Review the summary sheet called “The Basics of Giving a Good Lesson.”

**Required Viewing** (about 20 minutes)
In this lesson on the chain rule, the instructor asks *a lot* of different questions and a lot of different types of questions. How many questions does the instructor ask in this segment?!
View segment 6:53 to 13:11.
[https://www.youtube.com/watch?v=8dr1dZjfhmc](https://www.youtube.com/watch?v=8dr1dZjfhmc)

This biology instructor starts the first class of the term with three specific questions to check students’ pre-knowledge of the subject. If you were in that class, what would those questions have done for you?
View segment 0:01 to 4:26.
[https://www.youtube.com/watch?v=S9WtBRNydo](https://www.youtube.com/watch?v=S9WtBRNydo)

What does this programming instructor positively reinforces students when they ask questions.
View segment 0:01 to 10:12.
[https://www.youtube.com/watch?v=C5HeRliZ0Ns](https://www.youtube.com/watch?v=C5HeRliZ0Ns)

**Optional Reading**
“Although traditional lecturing has dominated undergraduate instruction for most of a millennium and continues to have strong advocates …, current evidence suggests that a constructivist ‘ask, don’t tell’ approach may lead to strong increases in student performance…” is from this article:
Active learning increases student performance in science, engineering, and mathematics
*PNAS* June 10, 2014 111 (23) 8410-8415; first published May 12, 2014
[https://doi.org/10.1073/pnas.1319030111](https://doi.org/10.1073/pnas.1319030111)

Interactive Teaching Methods Double Learning in Undergraduate Physics Class
*ScienceDaily* (May 12, 2011)
[https://www.sciencedaily.com/releases/2011/05/110512150817.htm](https://www.sciencedaily.com/releases/2011/05/110512150817.htm)

Undergraduate Science and Engineering Teaching Needs Improvement
*ScienceDaily* (May 21, 2012)
[http://www.sciencedaily.com/releases/2012/05/120521115702.htm](http://www.sciencedaily.com/releases/2012/05/120521115702.htm)

This article provides a good example of an interactive biochemistry classroom. While as TAs you will not be able to determine how a class runs, this piece might help to give you a sense of some things that you do to make your work with students more interactive:
[http://seattletimes.com/html/seattleuniversity/2016784402_seattleu17m.html](http://seattletimes.com/html/seattleuniversity/2016784402_seattleu17m.html)

Engaging students in conducting Socratic dialogues: Suggestions for science teachers
*Journal of Physics Teacher Education Online*, 4(1) Autumn 2006
[http://www2.phy.ilstu.edu/~wenning/jpteo/issues/jpteo4(1)aut06.pdf](http://www2.phy.ilstu.edu/~wenning/jpteo/issues/jpteo4(1)aut06.pdf) (Scroll to p. 10 to get to the article. Link does not work consistently, but typing address into browser does work consistently.)

**Questions?** Contact Paula Quinn: 508-831-6836 or pquinn@wpi.edu