

## **MCO G1 Scientific Teaching Workshop 2014**

### **Key points**

#### **Active Learning**

- Active learning is any activity that requires students to recall, think about, apply, and verbalize concepts.
- Active learning is an effective way to engage your students. Moreover, a wealth of studies show that students learn more through active learning than by passively listening to a lecture.<sup>1</sup>
- Teaching section is a great place for active learning.
- Some examples of active learning can be found on the Active Learning Handout.
  - Note that in many of the activities, students first spend time talking and working with a small number of their peers. This often increases students' confidence and willingness to then talk in front of the whole class.

#### **Assessment – Best Practices to Evaluate Student Learning**

- Activities require reflection and feedback for maximal learning gains.
  - During active learning exercises, students have the opportunity to assess their own knowledge and skills, clarify what good performance is, and develop their ability to assess their own learning.
- Group work provides essential feedback for both students and teachers.
- Assessment questions should span higher and levels of understanding.
  - Bloom's Taxonomy: A framework for classifying learning objectives or assessments. Some questions require lower-level thinking, while other types of questions require higher-level thinking. When you write questions, try to be cognizant of what level thinking you are asking your students to do.
  - Higher-order questions leads to deeper understanding and longer-lasting knowledge.
- TFs play an important role in bridging and connecting lecture with graded assignments.
- Learning goals and objectives
  - Learning goals: What do you want students to understand at the end of a class/unit/course?
  - Learning objectives: What should students be able to do to demonstrate that they have mastered the material?
  - Benefits of goals and objectives: They make it clear what is expected of the students. (No more wondering: What does my instructor really want me to get out of this class? What and how am I supposed to study?)

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<sup>1</sup> See: [http://cst.yale.edu/sites/default/files/active\\_learning\\_bibliography.pdf](http://cst.yale.edu/sites/default/files/active_learning_bibliography.pdf)

Freeman, S., et al. (2014). Active learning increases student performance in science, engineering, and mathematics. PNAS, 201319030. doi:10.1073/pnas.1319030111

### **Fostering an Inclusive Classroom**

- You will encounter a diverse group of students among Harvard undergraduates. Types of diversity include: race and ethnicity, gender, religion, geographical background, educational background and schooling, sexual orientation, etc...
- Proactive addressing of issues and use of campus resources can promote an inclusive classroom.
- Take advantage of, and direct your students to, campus resources such as: the Bureau of Study Counsel, University Health Services, the Bok Center for Teaching and Learning, and your course teaching staff.

### **How People Learn**

- Recalling information leads to remembering.
- Encountering the same idea multiple times leads to remembering.
- How students organize knowledge influences how they learn and apply what they know.
- To become effective learners, students must learn to monitor their own understanding.
  - Help students understand that the ability to learn is a skill that can be improved.
  - Give students opportunities to practice monitoring their own learning. For example, after an exam, ask students to describe their study strategies, analyze their mistakes, and create a new plan for studying.
- Introducing wait-time allows more students to think, learn, and be included in the classroom.