Teaching Where Students Learn: A Fresh Approach to Deploying GSIs

Steve Yalisove, Tershia Pinder-Grover, Crisca Bierwert and Kristen Tebo

Why Eliminate the Traditional Recitation Section?

- **Problem:** How to deliver an MS&E intro course that focuses on Biomaterials, Manufacturing, Materials for Energy, Aerospace Materials, etc., without teaching 3-6 different courses.
- **Solution:** Offer one 3 credit “core” set of lectures and several different 1 credit satellite courses that emphasized a particular flavor of Materials Science and Engineering. All students would take 3 core lectures per week and the satellite course depending on their discipline. Hence, we removed the recitation, removed 25% of the lecture material, and added the satellite lecture.
- **Challenge:** What is the impact of removing traditional recitation?
- **Opportunity:** Can we rethink the way students learn in different settings and redeploy our GSIs to optimize the temporal structure of a student’s learning?
- **Our Approach:** Teach the core with a Biomaterials satellite first before adding more satellites and experiment with different methods.

How can GSIs be Redeployed to Enhance the Learning Experience?

- Replace homework grading with extra office hours
- Replace stand and deliver recitation with extra office hours
- Have GSIs attend class and monitor Ctools Chat to answer questions in class
- Have GSIs lead learning centers to provide more one-one-one instruction

IMPORTANT: NEVER reduce the number of GSIs with online homework grading.

Where Do Students Learn?

- **GSI Office Hours**
  - 17 hours of office hours spread over each week during Fall 2008
  - Excellent one-on-one experience
  - Opportunity to get full credit on homework problems missed for students working with their GSI
  - Students choose the GSI each time

- **At Home**
  - Online Text
  - Online Homework
  - Online Tutorials
  - Online Screencasts (video lectures with a Tablet PC and voice commentary)
  - Recorded Lectures
  - One Website, Ctools, as a Dashboard to access every part of the course

- **Learning Centers**
  - Multiple instructors provide a variety of perspectives on how to explain course concepts
  - Students can find out what others are asking

- **In-Class**
  - Formal Lecture
  - Images, video, animations
  - Demonstrations
  - Problem solving
  - Clicker Problems
  - Peer Teaching

Presented at the Third Annual Research and Scholarship in Engineering Education Poster Session. 10/14/08