Why Eliminate the Traditional **Recitation Section?**

- Problem: How to deliver an MS&E intro course that focusses 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 I 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

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



Teaching Where Students Learn: A Fresh Approach to Deploying GSIs



Steve Yalisove, Tershia Pinder-Grover, Crisca Bierwert and Kristen Tebo Where Do Students Learn?

GSI Office Hours

- I7 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

Learning Centers



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

At Home

Wile Callister, Materials Sci	yPLUS: <u>Home My Pro</u> ence and Engineer	ofile <u>Help Contact us Logout</u> ring, 7/e		PLUS
Callister, Materials Science and Engineering, 7/e Material Science and Engineering 250				TEUS
Home Read, Study & Practice Assignment Gradebook				
Assignment >> Open Ass	ignment			
	-	Full Screen	Printer version	(Back Next)
				TENER HEAT?
HW-08	Chapter 10, Probl	em 10.10		
Chapter 10, Problem 1 Chapter 10, Problem 1 Chapter 10, Problem 1 Chapter 10, Problem 1 Chapter 10, Problem 1	The fraction recrystallized-time data for the recrystallization at 350°C of a previously deformed aluminum are tabulated here. Assuming that the kinetics of this process obey the Avrami relationship, determine the fraction recrystallized after a total time of 116.8 min.			
Chapter 15, Problem 1 Chapter 15, Problem 1		Fraction Recrystallized	Time (min)	
Isothermal transforma		0.37	95.2	
		0.77	126.6	
	y =			
		Question	Attempts: 0 of 5 used	Submit Answ
quiz_5_tuto	orial			
In most metal alloy	s, diffusion is f	aster than diffusion (consid	er only bulk single cry	vstal diffusion).
You wrote: Correct answer:	interstitial			
You wrote:				
Correct answer:	vacancy			
Return				

- Online lext
- 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





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

Refinement Process

CRLT's Midterm Student Feedback (MSF) permits students to vocalize course strengths, suggestions for improvement, and new ideas to mold a fresh approach



Strategies Learned

- Recitations CAN be replaced with learning centers and more office hours in large lectures
- MSF is excellent strategy for continuous improvement
- Online homework can stimulate GSI office hour attendance

Questions to Pursue

- What is the impact on learning?
- What is the impact on GSIs?

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