Finding the Right Balance: Process Calculations in the Classroom and on the Web

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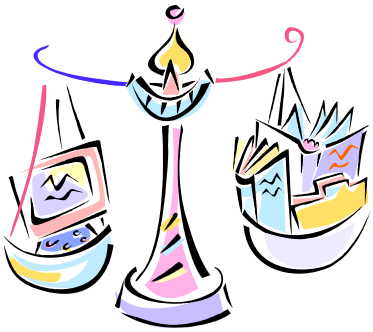

INNOVATION IN DELIVERY. In *Process Calculations*, chemical engineering sophomores learn to write and solve material and energy balances for simple and complex processes – skills that form a critical foundation for all subsequent chemical engineering core classes. In fall, I teach two thirds of our students using a traditional lecture format. In spring and summer, I teach the remaining one third using a web course that was developed in the late 1990's.

EDUCATIONAL OBJECTIVE: LECTURE COURSE

*TILE classrooms (spaces to **T**ransform, **I**nteract, **L**earn, **E**ngage) are being created at the University of Iowa that will facilitate my goal of building a more collaborative learning environment.* These classrooms come equipped with round tables, white boards around the room, and computers and projectors at each table. Using this instructional format, I will be able to pursue more active student learning, relying less on lectures and more on fostering direct interactions between the students and the instructional team.

Global Campus

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EDUCATIONAL OBJECTIVE: WEB COURSE

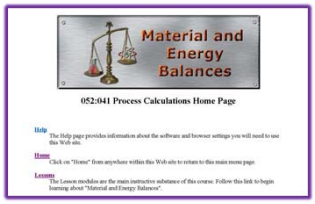
E-learning software such as Blackboard Collaborate and Panopto and enhanced computing performance offer avenues to update the course to match the learning needs and preferences of today's technically savvy students. These software enable sharing whiteboards and applications, talking about the course material and answering questions, conducting interactive quizzes and surveys, and recording sessions for re-play. Using this instructional format, I will be able to help the students, who may be anywhere around the globe, connect with each other during teaming activities and seek assistance quickly.

LEARNING ACTIVITIES & MATERIALS: LECTURE COURSE

- Pre-class quizzes
- Assigned learning groups
- In-class problems for active learning

LEARNING ACTIVITIES & MATERIALS: WEB COURSE

- Augmented lecture topics
- Recorded problem-solving sessions
- Distance teaming guide



EXECUTION IN THE TILE CLASSROOM

- Use pre-class quizzes to organize student groups and plan class topics
- Start class with a short example demonstrating concept
- Assign varied-length problems for students to work in groups with instructor coaching
- Use in-class problems to develop foundation for semester-long design project
- Provide extra credit and/or honors project options to students who wish to help upgrade the web course

EXECUTION ON THE WEB

- Update lessons with new technology
- Teach students elements of effective distance teamwork using Skype and other collaborative software tools
- Build a problem-solving help glossary using Panopto lecture capture
- Hold evening office hours and problem-solving sessions via Blackboard Collaborate
- Require students provide weekly progress update via Skype check-in or Twitter account

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