Blended Learning 2015: What Works, What Doesn't

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Panel

- Moderators
  - John Booske, Professor and Chair, ECE, University of Wisconsin-Madison (*Co-organizer*)
  - Mohamed Chouikha, Professor and Chair, ECE, Howard University (*Co-organizer*)
- Speakers
  - Bonnie Ferri, Professor and Assoc. Chair, ECE, Georgia Inst. of Technology (*Co-organizer*)
  - Cindy Furse, Professor and Assoc. VP Research, EE, University of Utah
  - Craig Scott, Professor and Chair, ECE, Morgan State University
  - Deborah Walter, Assoc Professor, ECE, Rose-Hulman Inst. of Technology

Blended Learning

- *"combines face-to-face instruction with computer-mediated instruction (internet, digital media)"**
- Facilitate *active learning* in the classroom
  - More individualized coaching, less mass lecturing
  - *More* compentency & mastery, less sorting
- Increase ROI of valuable instructor time
  - More high-level activity (answering student questions)
  - Less low-level activity (grading)
- Tipping point

"this meta-analysis [1] makes a powerful case that any college or university that is teaching its STEM courses by traditional lectures is providing an inferior education to its students" (C. Weiman [2])

- Practical advice and support
  - Illustrative examples
  - Resources

*-- Bonk, C.J., & Graham, C.R. (2006). The handbook of blended learning environments: Global perspectives, local designs. San Francisco: Jossey-Bass/Pfeiffer

Panel examples: Diverse Circumstances

- Resources (space, personnel, technology, etc.)
  - Well-resourced departments, institutions
  - Resource-limited departments, institutions
- Scale, i.e., course enrollment size
  - Large enrollment
    - Few large-enrollment sections
    - Many small-enrollment sections
  - Small enrollment
- Learner demographics and institutional cultures
- Course content
  - Concepts & analysis
  - Instructional laboratory (measurements, fabrication)
  - Combined

Panel Examples: Diverse Challenges

- Faculty buy-in
  - Transition or “hand-over” plan
- Student buy-in
- Infrastructure: space, technology req’ts
- Transition planning

UW-Madison ECE example

- 70% req'd core BSEE, BSCmpE courses blended, flipped, or online
- Addressed faculty & student buy-in and transition plan by strategic and tactical investment in infrastructure and leadership
- Space
  - Large capacity active learning spaces
    - WisCEL (www.wiscel.wisc.edu)
    - Plexus ALC
    - Multi-use: problem-solving and measurement learning

- Technology
  - Computers, networks
  - Adaptive, institution-controlled CMS with support (**MOODLE**)
- Leadership
  - WisCEL Director
  - Vice Provost for Teaching and Learning
  - Strong support from Chancellor, Provost, VCA, Deans
  - Department messaging and incentives
    - Faculty incentives: TA's + no graders vs no TA's and inadequate graders; conversion support; access to exciting classrooms; student appreciation
    - Student engagement
    - Student success data
      - Builds student demand
      - Entices alumni philanthropy

Guiding Principles

- Prioritize pedagogy over space. But classroom can influence effectiveness. Best: spaces that have no obvious "front" of the room, easy mobility for students and coaches
- Understand basics of human learning and working memory
  - *Frequent* and *immediate* feedback
  - *Frequent*, more-focused assessments (quizzes and super-quizzes, including redundancy) vs comprehensive cramming for comprehensive exams
  - Maximum time on task, maximum access time to activities, lots of tries and retries, motivations that promote that
  - Daily or every-other-day engagement with material rather than once per week
- Late-stage-teenager brains, not (always) adult brains
  - Coaching student behaviors along with introducing new knowledge
  - If there is something you think it good for student to do, give points/score/grade for it
  - P2P collaboration/social rather than isolation/separation

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