

Are There Limits to Online Learning?



Online Degree Programs

Wayne P. Pferdehirt

Director, Graduate Distance Engineering Degree Programs

University of Wisconsin-Madison

NAE Frontiers of Engineering Education

October 2014



Context: Online Graduate Engineering Degree Programs at UW-Madison

- Current Degree Programs
 - M.S. Electrical Engineering (Power Systems)
 - M.S. Mechanical Engineering (Controls)
 - M.Eng. Engineering Management
 - M.Eng. Engine Systems
 - M.Eng. Sustainable Systems Engineering
 - M.Eng. Technical Japanese
 - M.Eng. Polymer Science and Engineering
- Under Development
 - M.Eng. Environmental Engineering
 - M.Eng. Applied Computing & Engineering Data Analytics
- Students are mid-career engineers
- Emphasis on project- and problem-based learning



Engineering Education is Undergoing a Major Transformation

- Transformation is happening at our campuses
 - Active learning
 - Project- and problem-based
 - Experiential & authentic
- “The large lecture class is dead.”
 - John Hennessey, President Stanford U., June 2014
- Why would we try to replicate the large lecture hall online?



If Online Education is the Answer, What is the Question??

- What is your goal?
 - *What is the motivation driving your interest in online learning?*
 - *What needs, opportunities, and constraints are part of the puzzle?*
- Online education can be a means, but is not itself an end
- Let your end be a vision worth your university's very best faculty



Going Online: A Typical Scenario

- Starts with a desire to increase institution's revenues
- Many/most faculty want a model that requires as little change as possible to their teaching practices
- Goal is to have online courses be “as good as existing on-campus courses”
- The result
 - Record and stream existing lecture-based courses
 - More of the same
- *What's wrong with that?*



Is “As good as classroom instruction” an Adequate Goal?

- **Going online can remove/reduce barriers to education**
 - Who learns
 - Who teaches
 - When teaching and learning happen
 - How teaching and learning happen
- **Done well, online education practices can improve classroom practices**
- **Can be a game-changer for colleges and departments**



How do you envision online learning?

- A digital file cabinet
 - Digitize and post existing resources from f2f course



How do you envision online learning?

- A one-way hose for streaming course recordings and related content
 - Students are receivers of content with little/no meaningful personal engagement with other students and faculty



How do you envision online learning?

- An opportunity to create a new learning space
 - 👍 collaborative
 - 👍 engaging
 - 👍 authentic
 - 👍 new freedom in where, when, and how learning occurs



Creating a New World



- New opportunities for learners with shared, unique needs and goals
- Engaging best instructors, speakers and projects from anywhere
- Learning that fits the needs and expectations of globally distributed teams
- Authentic, immediately applicable learning



Assessing and Creating Success for Online Degree Programs

Program Definition

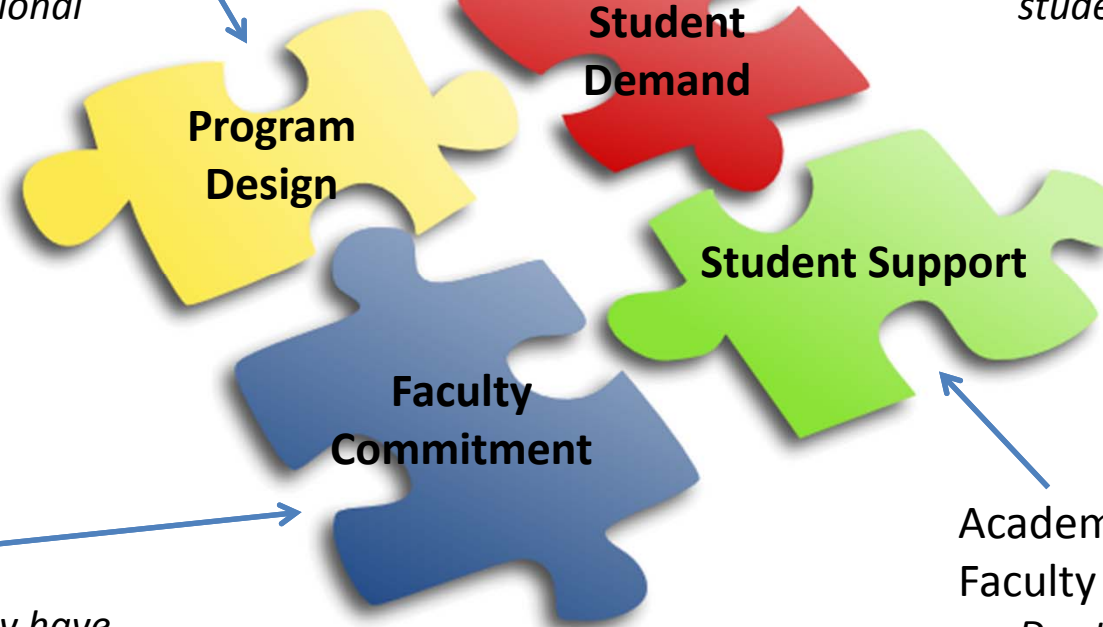
Academic Plan

- *How do we provide valuable knowledge to non-traditional students?*

Market Assessment

Business Plan

- *How we will reach enough of the right students?*



Faculty Plan

Business Plan

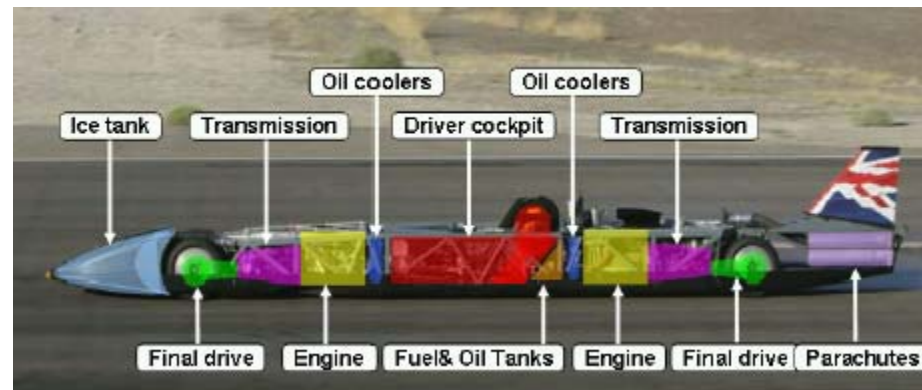
- *Do the faculty have what they need to provide full support?*

Academic Plan

Faculty Plan

- *Do students have what they need to be successful?*

An “Aha” moment for me



UW-Madison Master of
Engineering in Engine Systems



Reflections from UW Engineering Instructors Teaching Distance Students

- Importance of establishing and maintaining **meaningful online presence**
- **Timely responses** to students' questions
- **Personal attention and engagement**, not automation
- Formats that **reinforce** each other
- Thoughtfully and creatively **mix and tailor formats**
- Extra care in **thoroughness and clarity** of requirements, directions and assignments

Responding instructors: J. Blanchard, N. Duffie, S. Anderson, C. Carlson-Dakes, C. Nicometo, T. Nathans-Kelly, J. Davis, B. Price



Factors that often Limit the Success of Engineering Online Degree Programs

- Faculty bandwidth
- Willingness of faculty to adapt what is taught and how it is taught to target students
- Commitment by universities to adapt student support services to the needs of online learners
- “Build it and they will come” approach to marketing
- Faculty compensation issues

These can be successfully tackled with focus and commitment



The best online learning actively extends the boundaries of active learning

- Increasingly, we are seeing how active learning strategies increase student learning in on-campus courses



- Then why use online learning to recreate the lecture hall?





Use “the Move to Online” to *Transform* Engineering Education

- *Use your initiatives in distance education as strategic opportunities to **make major advances in the nature, quality, and impact of education** at your institution.*
- *Decide (really decide) to **make meeting the needs of online students** as the #1 priority in course and program design*
- *Engage **experienced, capable instructional designers** in the design of programs and each course.*





Use “the Move to Online” to *Transform* Engineering Education

- *Use online formats and tools to **build effective, meaningful community** in support of learning*
- *Integrate learning and professional practice as part of coursework*
- *Use online teaching to **build new and deeper connections** between your research and industry*





Re-Creating Engineering Education

- With your faculty create a compelling vision worthy of them and your institution
- Create a path and stepping stones to get there
- “You must be the change you wish to see in the world”

– *Mohandas Gandhi*



Are There Limits to Online Learning?

- Online learning expands limits of teaching and learning
 - Who learns
 - Who teaches
 - Authenticity of learning
- Critical to identify target students and goals of online learning
- Faculty availability is usually limiting resource
- Don't settle for transmission
 - **Let's transform!**



Summary:

Keys for Successful Online Degree Programs

- Developing programs that align with university's strengths and faculty's research/teaching goals
- Commitment to *really* understanding and designing to meet student learning goals
- Active, sustained, meaningful engagement by instructors
- Degree programs that are more than “a bundle of courses”
- Program and course design that builds and supports authentic, student-valued community
- Effective instructional design support for faculty
- Win-win-win approaches to partnerships and revenue sharing



Thank You

Wayne Pferdehirt

Director, Graduate Engineering Distance Degree Programs

wppferde@wisc.edu

For information re. UW-Madison
online engineering degrees see:

<http://distancedegrees.engr.wisc.edu/>

