PLENARY SESSION:
Technology-Enabled Learning: What’s Going on at MIT?

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A DECADE OF ED-TECH INNOVATION
Faculty-driven experiments.

ED-TECH INFRASTRUCTURE
Central systems, services, organizations.

OCW, MITx, and edX
How do they relate?

OCW INITIATIVES
OCW Scholar, High School, Educator.

MITx INITIATIVES
Residential and global learning projects.
A DECADE OF ED-TECH INNOVATION AT MIT

xTutor: 1999

MIT Shakespeare Project: 1992

Internet Labs: 2003

MIT Mathlets: 2006

TEAL Physics: 2000-2003

PIVoT: 1999

Visualizing Cultures: 2002

TEALsim: 2004

MIT OpenCourseWare: 2001

STAR Tools: 2007

MITx: 2012
Unlocking Knowledge, Empowering Minds

MIT OPEN COURSEWARE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
OCW, MITx, and edX>

**OpenCourseWare**

- Comprehensive publication of openly-licensed materials from MIT courses (~2150)
- A web site, an archive, a repository
- Not online courses
- Distributed thru mirror sites and other channels
- Voluntary faculty participation (~65%)
- Mature publishing organization minimizes demands on faculty
- A global movement (>300 universities in OCWC)

**MITx**

- **Global MITx**: Online courses for learners worldwide, with assessment & certificates
- **Residential MITx**: Online courses and modules for use in MIT residential courses
- Interactive exercises, auto-graded problems & exams, online labs, progress data
- A new team supports faculty-led development projects
- Internal platform for use by MIT residential courses
- Research and experimentation
OCW, MITx, and edX>

edX is a platform for a global audience

MITx is the production house and the product - and a platform for a local MIT audience
OCW ROLE IN DIGITAL LEARNING AT MIT

• MIT remains committed to OCW’s historic mission

• OCW provides organizational infrastructure for MITx and the Office of Digital Learning, including support for MITx platform and projects

• OCW is a source of raw materials for faculty building online courses

• OCW will document and disseminate changing approaches to teaching and learning at MIT
Unlocking Knowledge, Empowering Minds

• 2,150 Syllabi & reading lists
• 18,000+ Lecture notes
• 10,000+ Assignments
• 1,000+ Exams
• 700+ Projects

Plus:
• Video lectures (~60 courses)
• Complete texts (~30)
• Simulations/animations
• Pedagogical materials
• >300 mirror sites

http://ocw.mit.edu
What impact have MOOCs had on OCW usage?
**25% increase in 2012**
Grant-funded project to enhance OCW courses for independent learners:

- Additional faculty-authored content, sequenced presentation
- 12 OCW Scholar courses now among OCW’s most popular
- 3 more in pipeline
- Links to OpenStudy groups
- Some may be repurposed for MITx

Principles of Microeconomics

http://ocw.mit.edu/courses/ocw-scholar
Grant-funded project with MIT Chemistry to develop resources to inspire interest in chemistry among high school audiences:

• Video-based chemistry demonstrations with explanations of the science, and notes for teachers.

• MIT intro chemistry courses mapped to AP Chemistry framework.

• “ChemLab Boot Camp” reality-video series, featuring students taking MIT’s freshman chemistry lab course.

• Inspirational interviews with MIT chemists about their research.

http://ocw.mit.edu/high-school/
Pilot program to enhance the value of OCW for educators around the world, including MIT:

• Educator-oriented add-ons to standard OCW course publications providing perspectives of MIT faculty on teaching aspects of course.

• New OCW publications intended to focus primarily on the pedagogy of a course rather than just content.

• Thematic, curated collections of resources highlighting class structures, educational goals and challenges, use of technology in classroom, etc.
Dr. Short addresses 22.033 students during class. (Image courtesy of Curt Newton.)

### About the Course

This page focuses on 22.033/22.33 Nuclear Systems Design Project as it was taught by Dr. Michael Short in Fall 2011.

Nuclear Systems Design Project is an intense capstone project course designed primarily for MIT nuclear engineering undergraduates. In this course, students collectively tackle all facets of an open-ended, multi-disciplinary nuclear engineering design challenge. Learn more about the course in the Syllabus.

### Teaching Topics

In the following pages, Dr. Short discusses specific aspects of his experience as the course instructor.

- Developing the project assignment
- Guiding students through each phase of the course
- Tailoring the course to students’ needs
- Teaching students to be engineers
- Teaching communication
- Making content tangible

http://ocw.mit.edu/courses/nuclear-engineering/22-033-nuclear-systems-design-project-fall-2011/teaching-this-course/
MITx INITIATIVES > RESIDENTIAL MITx

Goal: reimagining learning on the MIT campus

• in use by 10 on-campus courses (Spring 2013)

• 1,260 MIT users
MITx INITIATIVES > RESIDENTIAL MITx

Typical uses of MITx platform in MIT on-campus courses:

• Course 1: Administration of online reading assignments, reading questions, problem sets, and Matlab tutorials.

• Course 2: Students access online e-text, do online problems, and access interactive online lab.

• Course 3: Students access online reading assignments and videos, and do online homework before class. Class time devoted to case studies.

• Course 4: Students access research articles and online videos, do “finger exercises” associated with videos, do online problem sets.
Unlocking Knowledge, Empowering Minds

6 new MITx courses on edX in Fall 2013

- 7 MITx courses on edX in Spring 2013
- 300,000 learners worldwide
THANK YOU

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Streamlining workflows will be key to improving MIT residential education and reducing costs while sharing our content and delivering online courses for educators and learners around the world.
Magnifying Global Impact Through Open Sharing

2,150 COURSES
150 MILLION PEOPLE

60% OF TRAFFIC IS INTERNATIONAL
1 M MONTHLY VISITORS

FOUNDATION FOR A NEW ERA OF EDUCATIONAL INNOVATION
OCW’s definitive and open presentation of curriculum helps faculty develop new approaches to teaching and learning.

A COMMITMENT TO OPENNESS
It speaks to the open nature of MIT: that knowledge is there for the taking and not hoarded.

- MIT Alumnus

VISITOR EDUCATIONAL ROLES
43% INDEPENDENT LEARNERS
9% EDUCATORS
42% STUDENTS

60% OF TRAFFIC IS INTERNATIONAL