

The Magic Beyond the MOOCs





Lecture, Circa 1308 AD

Wikipedia

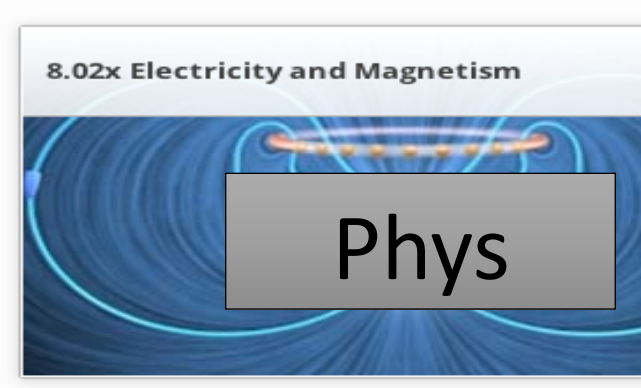
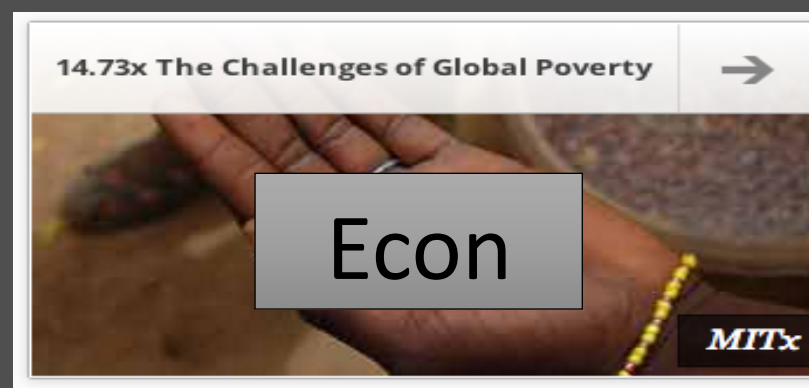
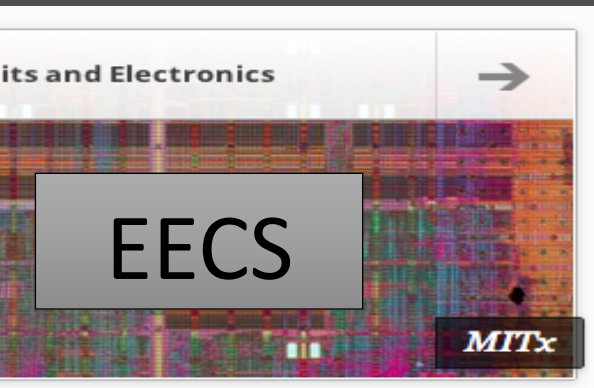
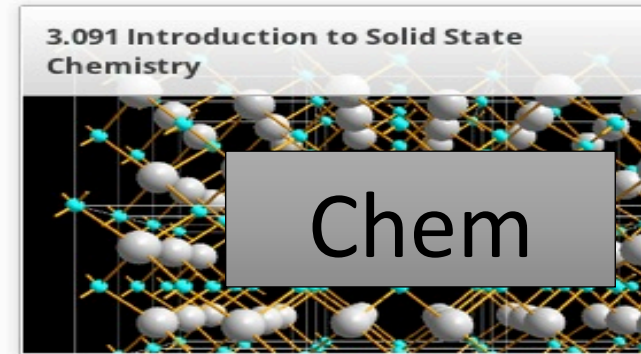
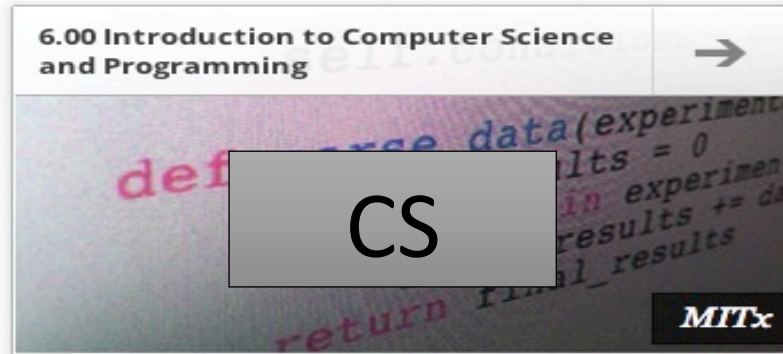
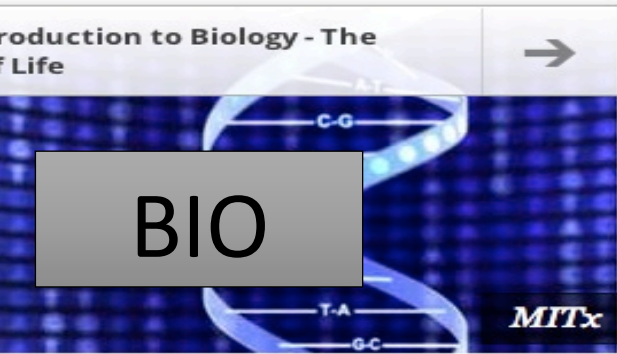


How are MITx and edX different?

MITx

The edX logo, featuring the letters 'ed' in pink and 'X' in blue.

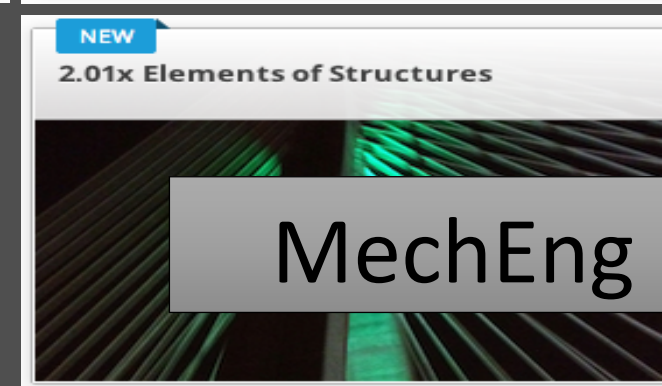
MITx on edX



6k enrolled

2k active

(fall 2012 to spring 2013)
28k unique



How Online Enhances the Magic of Our Campus

Science is a conversation between rigor and imagination. What one proposes, the other evaluates."

Andrew Abbott

MITx: Digital Learning Online

EW
8.02 Concourse Physics II →

Concourse 8.02

$x' = x - f(v) + g(v)$

MITx

6.042x Mathematics for Computer Science →

$12 \times 8 + 2 = 98$
 $123 \times 8 + 3 = 987$
 $1234 \times 8 + 4 = 9876$
 $12345 \times 8 + 5 = 98765$
 $123456 \times 8 + 6 = 987654$

MITx

6.s064x Introduction to Machine Learning →

$x_{t-1}^{(2)}$ $x_t^{(2)}$ $x_{t+1}^{(2)}$

$\Delta \hat{y}_{t-1}$ $\Delta \hat{y}_t$ $\Delta \hat{y}_{t+1}$

MITx

EW
8.02 Physics II ESG →

Electricity and Magnetism

MITx

8.011 Introductory Mechanics →

Physics 8.011
CLASSICAL MECHANICS

MITx

18.05x Introduction to Probability and Statistics →

18.05 Spring 2013

MITx

5.11x Principles of Chemical Science →

MITx

Spring 2013
10 Residential MITx Courses
1,260 users

What creates stars?

The Magic of the Interpersonal



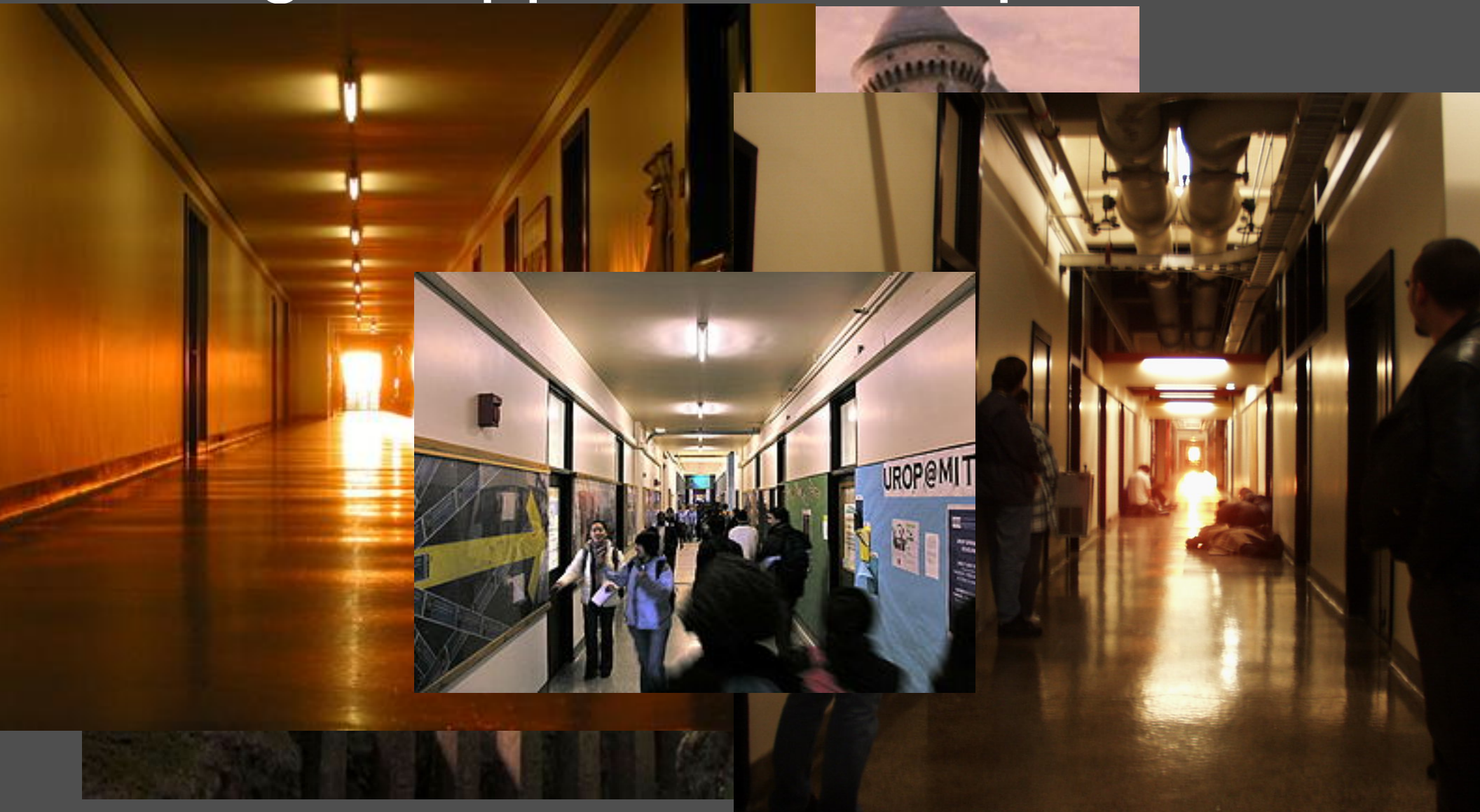
David Pritchard

In the 70's and 80's, David Pritchard, Professor of Physics at MIT, mentored 5 students and associates who went on to win Nobel Prizes:

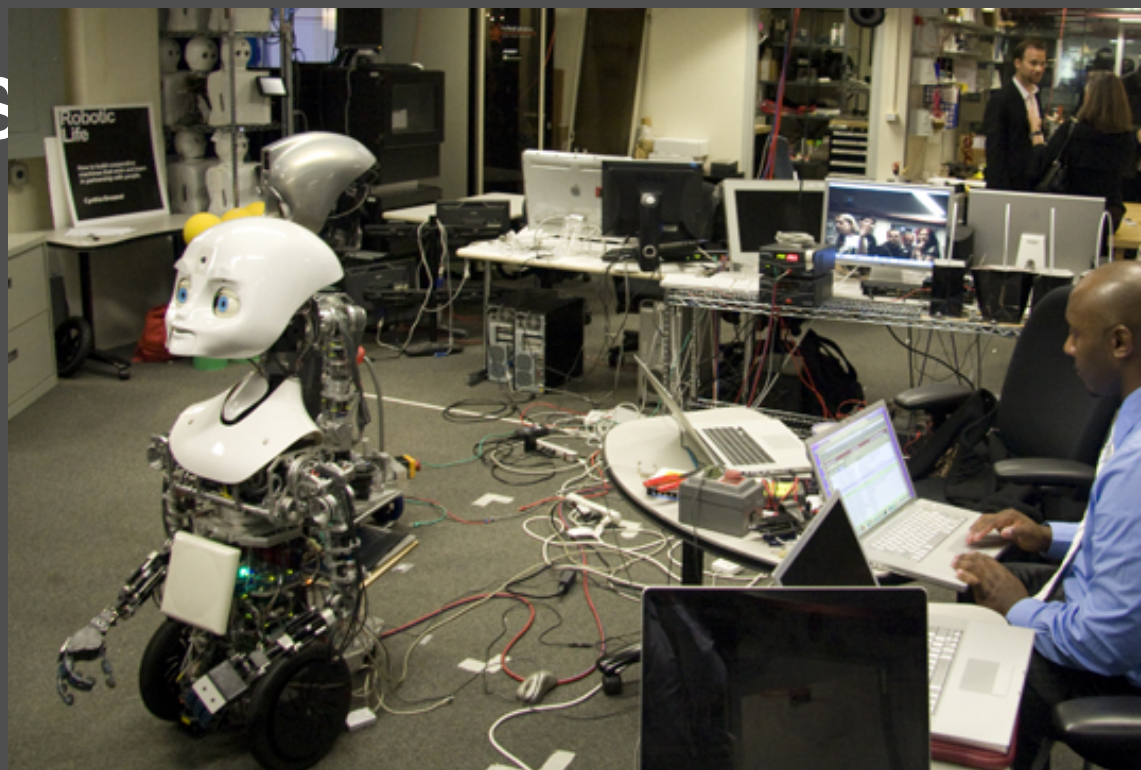
1. Bill Phillips
2. Steven Chu
3. Carl Wieman
4. Eric Cornell
5. Wolfgang Ketterle

In fact Wolfgang Ketterle handed his Nobel Prize to David Pritchard when he returned from Sweden.

The magic happens on campus



How the magic occurs





Distilling and Delivering Magic

History of Educational Innovation

1969: Creation of ESG

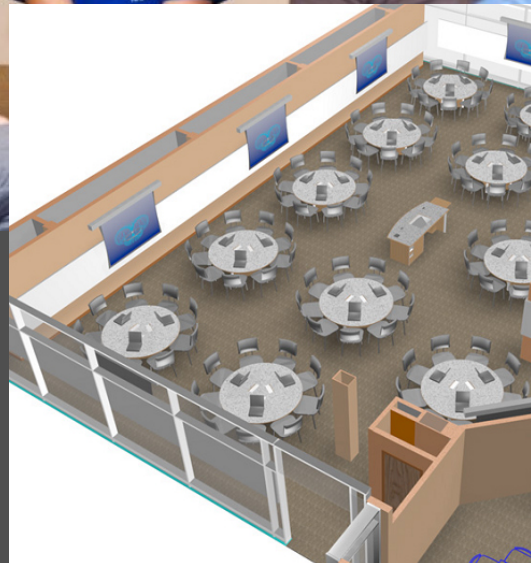
- Small interactive classes
- Problem-solving sessions
- Discussion-oriented seminars.

1970: Concourse

- Integration of the Sciences and Humanities
- Lunches and Seminars

1998: TEAL

- Interactive Engagement
- Technology Enhanced Active Learning



Flipping Classrooms

Going back to 6.001 in the late 1990's,
automatic tutors come from
desire to enrich in-class experience

More recently

6.01: Flipped classroom

8.371: Online tutor

14.73 + 14.73x: Flipped + Worldwide

8.02 + 8.02x: TEAL

3.091 + 3.091x: Fall 2013 experiment



Pedagogical Foundations of Online Tutors

MOOC Characteristics	Pedagogical Benefits
Online delivery	Efficacy of online learning
Short videos	Enhanced attention and focus
Online quizzes	Retrieval learning
Short videos and quizzes	Mastery learning
Online forums	Peer assistance, out-of-band learning

Glance, Forsey and Riley. The Pedagogical Foundations of MOOC's.

The Challenges Going Ahead

The Fear: This will cost jobs


THE CHRONICLE OF HIGHER EDUCATION
May 22, 2013

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Go

 THE CONVERSATION
Online opinion on ideas and higher education.

PREVIOUS
← When Too Few Minorities Are Too Many Terrorism Research Has No

Who's Afraid of the Big P


May 6, 2013, 1:00 pm
By Andrew Valls



Are MOOCs and other online materials a threat to quality public higher education, and to our role as

Perhaps, but more likely that our jobs will change

CampusViewpoints
Find out what it means to be a truly international university

 The University of Nottingham
UNITED KINGDOM • CHINA • MALAYSIA

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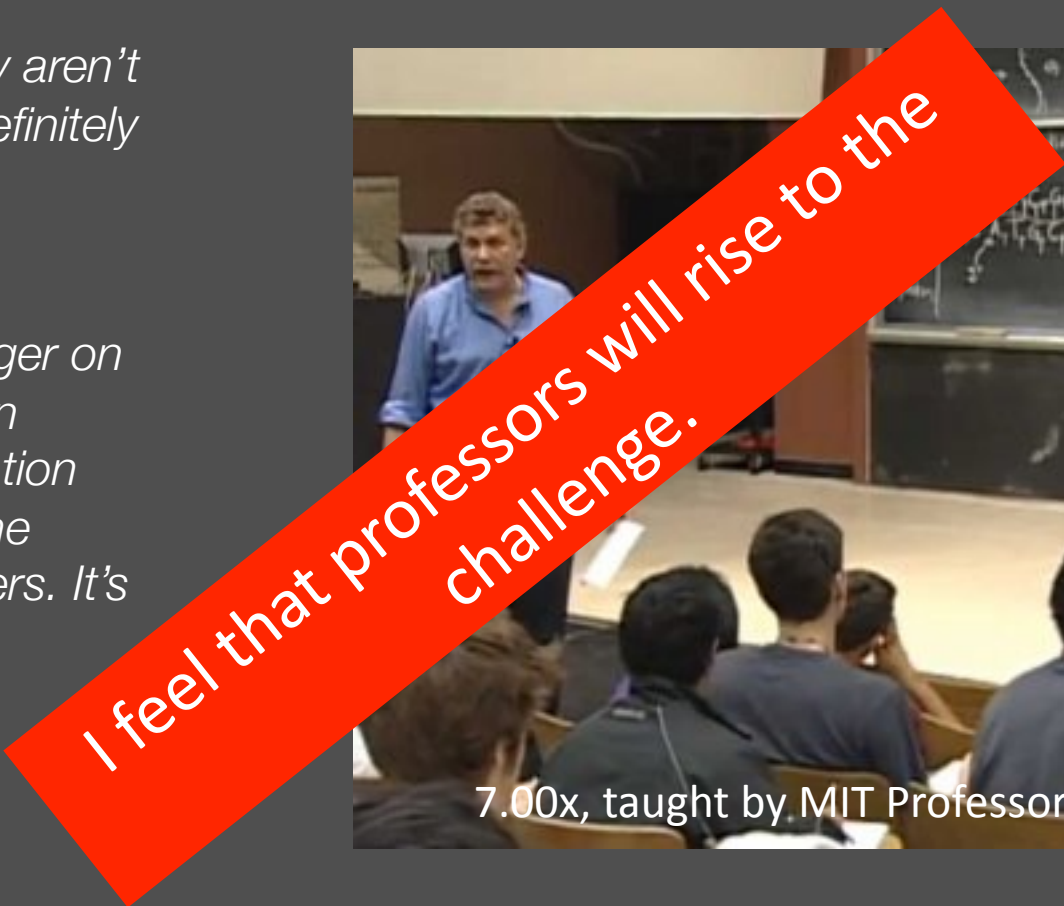
What the press is saying about online

"Live and taped lectures really aren't the same. Live lectures are definitely worse."

...

The burden of proof is no longer on technology to show that it can make traditional higher education better in a way that's worth the price to students and taxpayers. It's the other way around."

Kevin Carey, New America Foundation

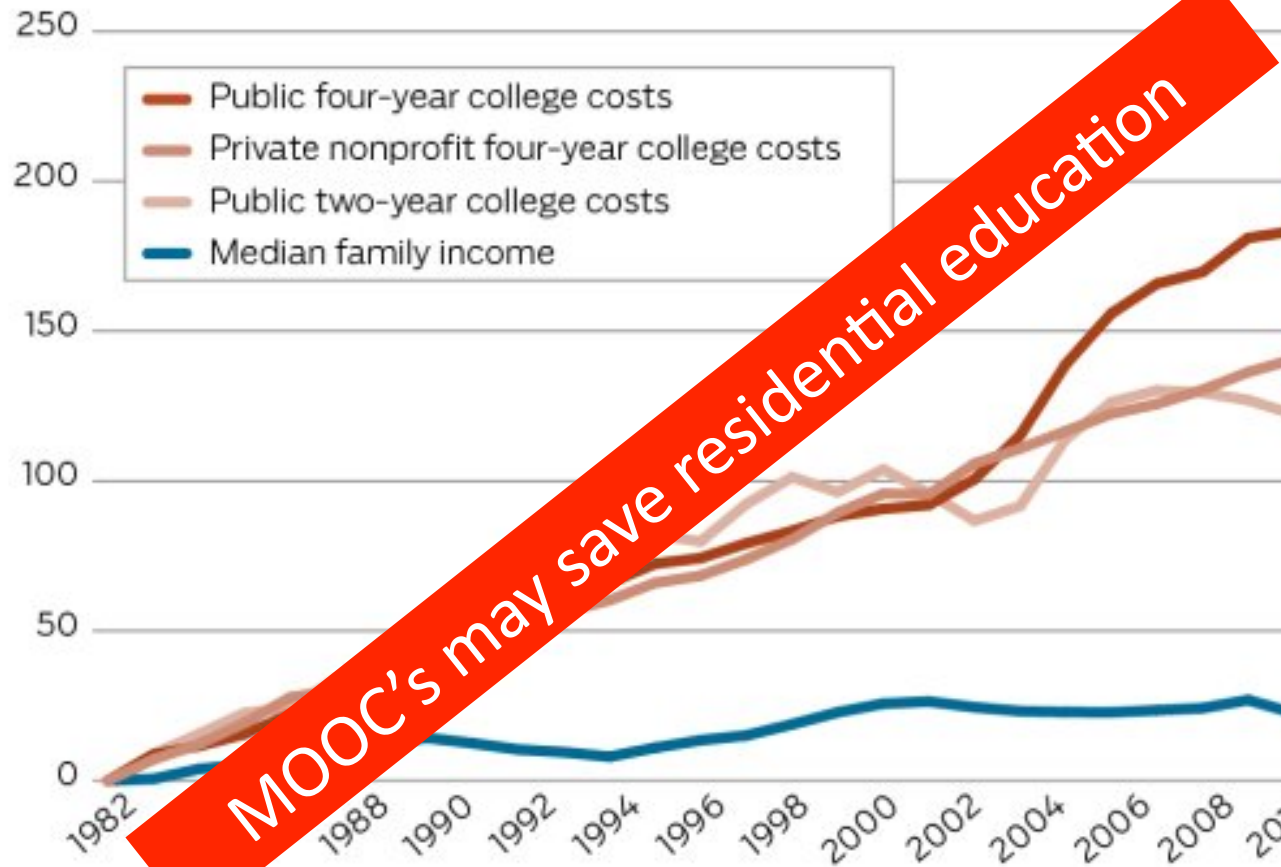


7.00x, taught by MIT Professor Eric Lander

The hard reality

College costs and median family income, 1982 to 2012

Inflation-adjusted increases



MOOC's may save residential education

Sources: U.S. College Board, Annual Survey of Colleges; National Center for Education Statistics, Integrated Postsecondary Education and Data System.

Center for American Progress

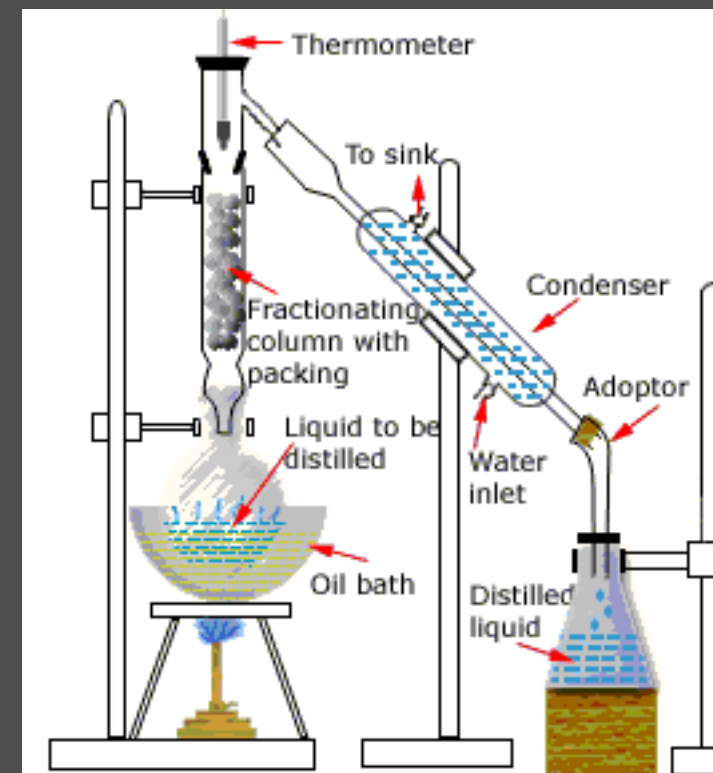


The new challenge: How to distill and enrich

Humanities figured this out a long time ago

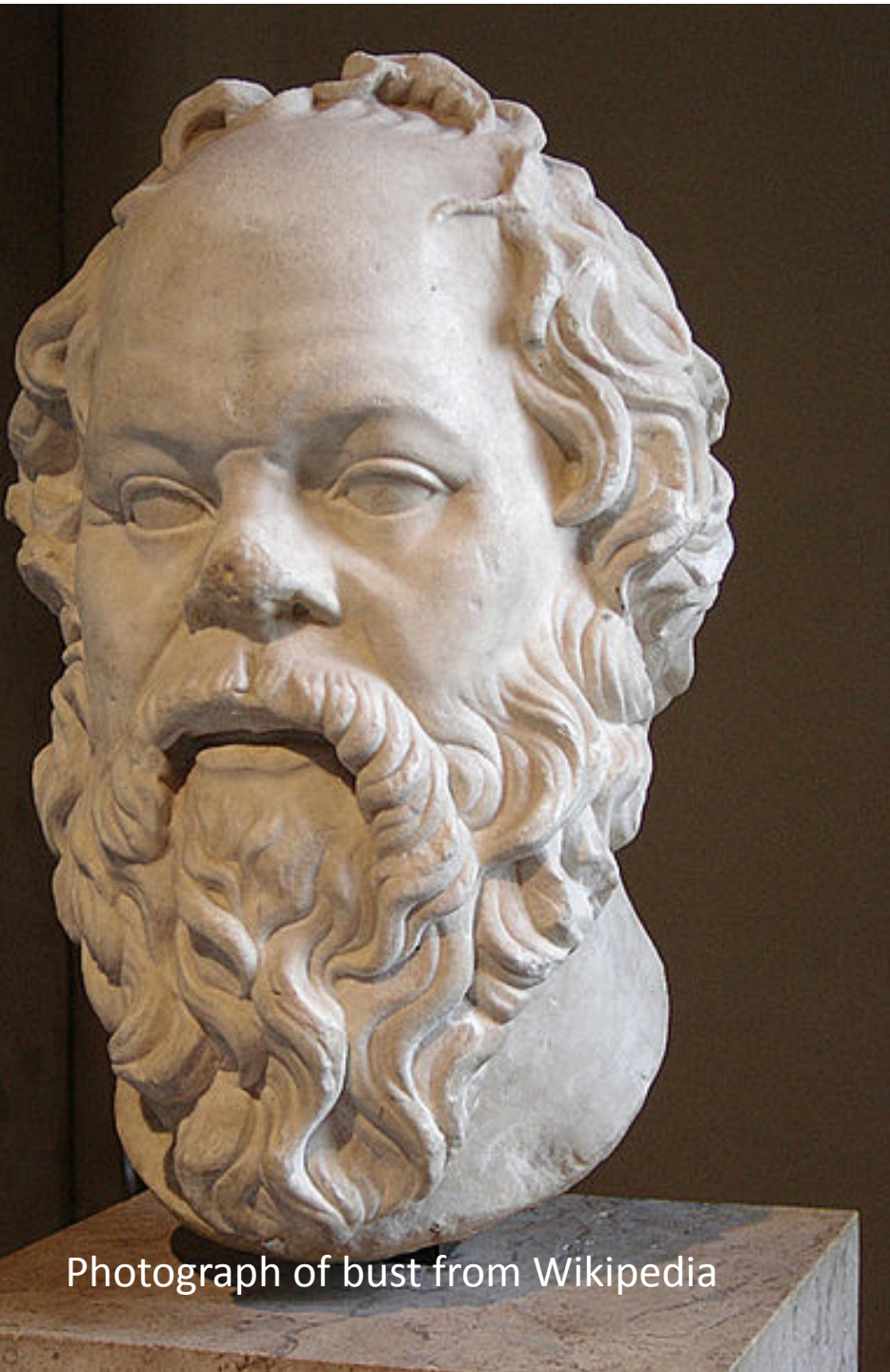
Once flipped: what next?

- Solving problems?
- Tutoring?
- Problem-based teaching?
- Project-based teaching?
- Hands-on learning?
- Field work?



<http://getsciencehelp.wordpress.com/2013/05/13/uses-of-fractional-distillation/>

The Challenge of New Technology



Photograph of bust from Wikipedia

Socrates on Writing

Ammon to Theuth

“...this discovery ... will cause forgetfulness in learners, because they will not use their memories. They will trust the written characters and not remember for themselves.”

Plato, *The Phaedrus*, Approximately 370 BC