

Lifelong Learning on the Web

Presentation to
OSHER Lifelong Learning Institute
Social Media and Digital Technology

July 1, 2013

Douglas H. Fisher
Director of the Vanderbilt Institute for Digital Learning
Vanderbilt University

Outline

- Motivations for online learning
- Availability of (free) online learning materials
- Technological and Pedagogical Theory
 - Communities of Learners (Global and Local)
 - Personalization and Humanization through Technology
- Some history and proposals

Overview Videos

Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU>

Salman Khan: <http://www.youtube.com/watch?v=nTFEUsudhfs>

Peter Norvig: <http://www.youtube.com/watch?v=tYclUdcsdeo>

(Free) Online Education Resources

COURSERA <https://class.coursera.org/>

EdX <https://www.edx.org>

Udacity <http://www.udacity.com>

Udemy <http://www.udemy.com>

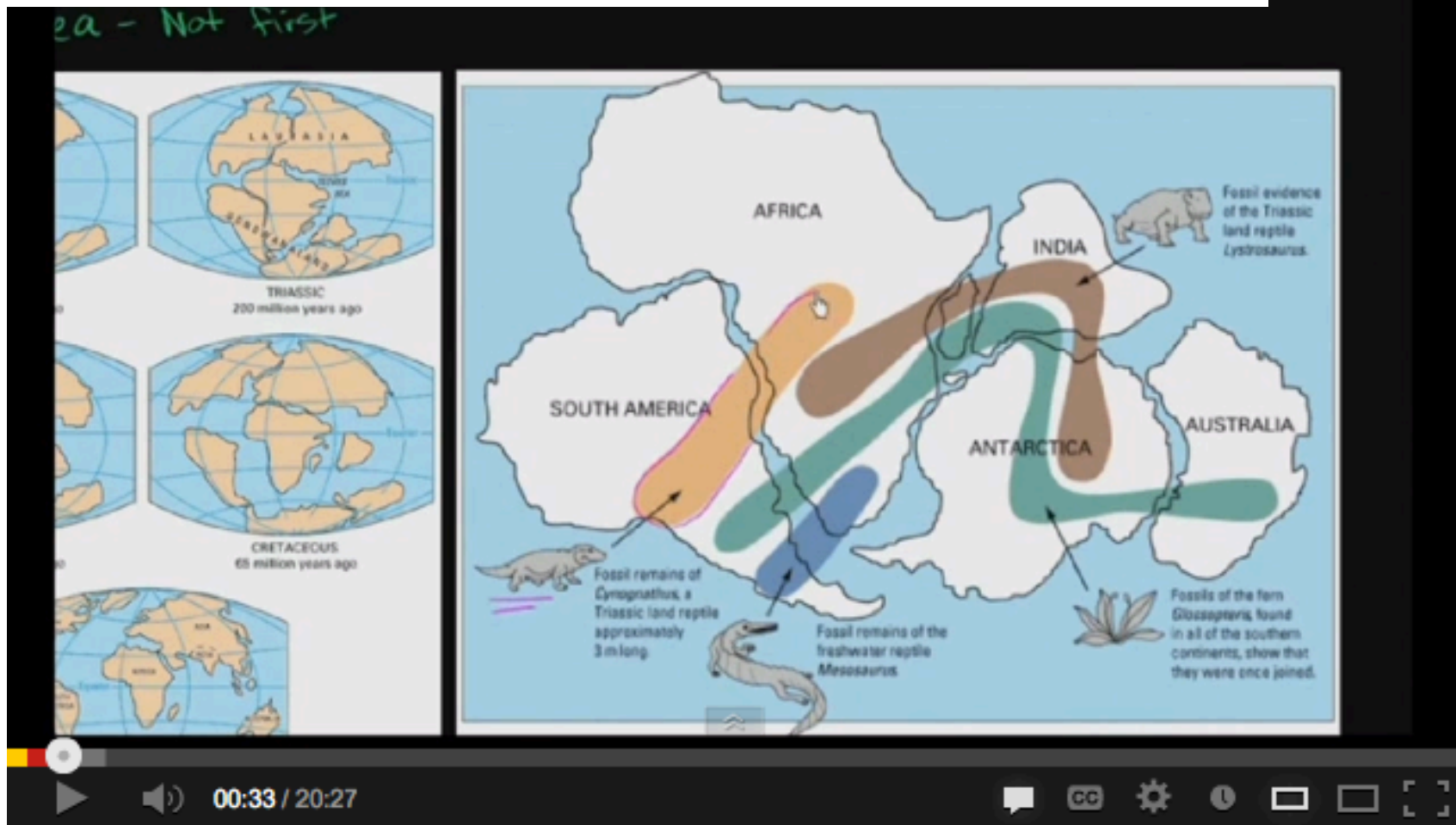
Khan Academy <http://www.khanacademy.org>

- Motivations for online learning



Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (0-2:48)

- Availability of (free) online learning materials



Salman Khan: Let's use video to reinvent education



TEDtalksDirector · 1,428 videos



Subscribe

1,227,283

627,595

7,842 67

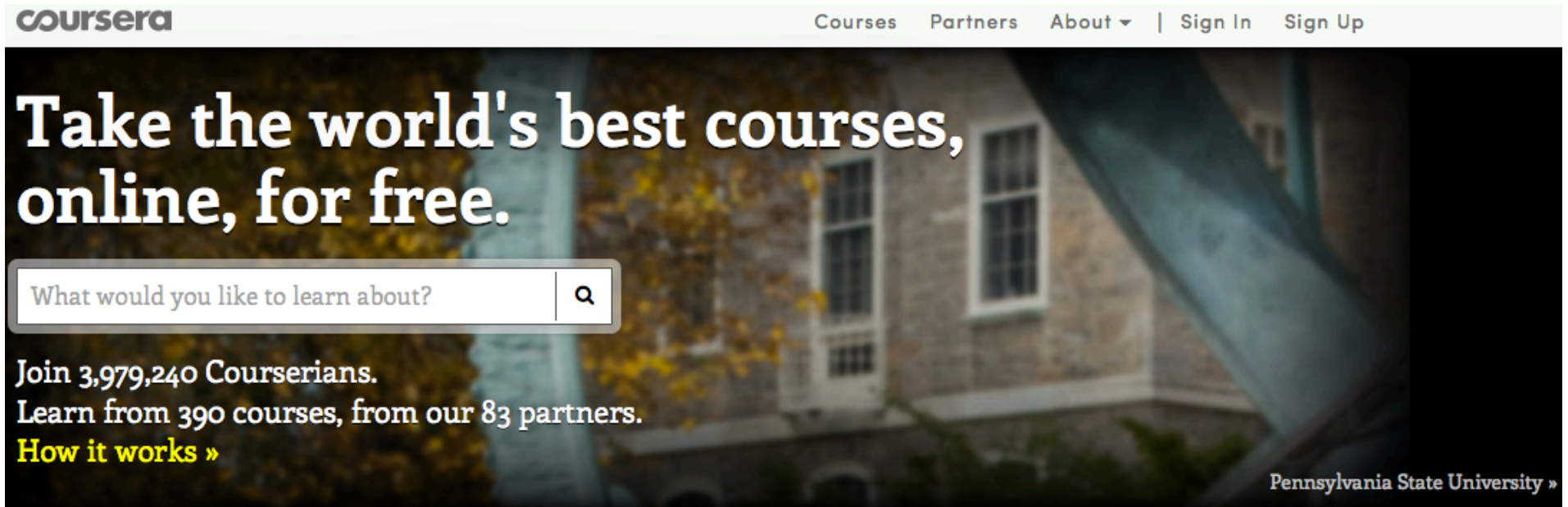
Salman Khan: <http://www.youtube.com/watch?v=nTFEUsudhfs> (0 – 1:36)

- Availability of (free) online learning materials



Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (2:48-5:11)

COURSERA <https://class.coursera.org/> (390 courses, 83 schools, 3,979,764 Coursarians) **UPDATED!!!**



coursera Courses Partners About | Sign In Sign Up

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What would you like to learn about?

Join 3,979,240 Courserians.
Learn from 390 courses, from our 83 partners.
[How it works »](#)

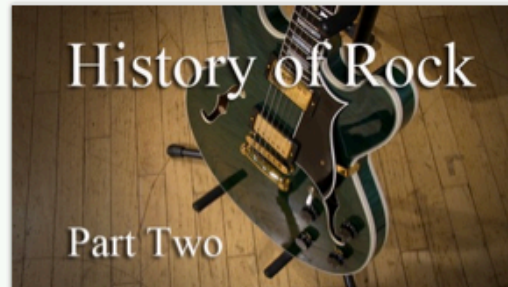
Pennsylvania State University »

STARTING SOON (33)

[View courses starting soon »](#)



Coding the Matrix: Linear Algebra through Computer Science Applications
Brown University, Jul 1st



History of Rock, Part Two
University of Rochester, Jul 8th



Songwriting
Berklee College of Music, Jul 19th

For profit, contracts with schools

Douglas H. Fisher

EdX <https://www.edx.org> (64 courses, 28 schools)

HOW IT WORKS

COURSES

SCHOOLS

REGISTER NOW

log in

The EdX logo features the letters 'ed' in a dark red color, 'x' in a grey color, and 'X' in a bright blue color. The letters are stylized and overlapping.

Take great courses
from the world's
best universities

register now



Not-for profit, contracts with schools

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Udacity <http://www.udacity.com> (25 courses)



Learn. Think. Do.

Invent your future through free interactive college classes.

BEGINNER

[View all](#)



Intro to Computer Science



College Algebra



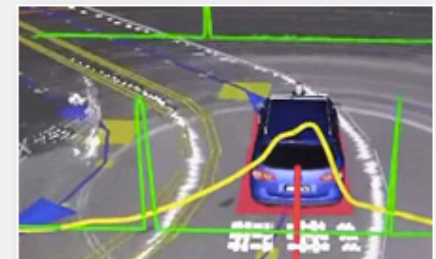
Statistics



Introduction to Physics

INTERMEDIATE

[View all](#)



For profit, contracts with individual faculty members

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Khan Academy <http://www.khanacademy.org> (> 3,500 videos)

LEARN ▾ COACH ABOUT DONATE **KHANACADEMY** Search for a video or topic LOG IN SIGN UP

Our Mission Blog Our Team Our Interns Our Supporters Volunteer Discovery Lab MCAT Video Competition



A free world-class education for anyone anywhere.

Khan Academy is an organization on a mission. We're a not-for-profit with the goal of changing education for the better by providing a free world-class education for anyone anywhere.

All of the site's resources are available to anyone. It doesn't matter if you are a student, teacher, home-schooler, principal, adult returning to the classroom after 20 years, or a friendly alien just trying to get a leg up in earthly biology. Khan Academy's materials and resources are available to you completely free of charge.

Khan Academy Exercises and Reports Overview YouTube

New Ex	Sub 1	Add 2	Mult 0.5	File	Add 3	Sub 2	Mult 1	Div 0.5	File 2	Add 4	Sub 3	Div 1
Mult 1.5	Arith WP1	4 Projs 1	File 3	Div 1000	Comp 200	Mult 2	Add Dec	Sub 3	Arith 0.1	Div 1.5	Arith WP2	4 Projs 2
Div 1002	Add dec 0.5	Mult 3	Div 2	Place value	Order Pr	Counting 1	Tell time	+ Neg 0.1	0 place val	Sub dec 0.5	Mult 4	Sub Dec
Div 3	+ Neg 0.1	Place 0.1	Add value	Sig fig 1	Tell time	RD whole 1	Counting 2	Div 4	+ Neg 0.1	Prime fac	Rounding	Comp 1000
Fact WP	RD 1000 1	Rec fact 0.5	+/- dec WP	Tell time 2	Unit conv dec	Mult Dec	Order Ops	OOD	Eqn Fac	Exponents 1	Prime 0.1	Recog Fact
Eqn Fact 0.1	Frac WP 1	Recog fact	Exponents dec	RD 1000 2	LOE	Units	Exponents 2	Order Dec	Comm Dec	Step Fact		
Mass Angles	Order Neg 0.1	RD bar ch 1	Div dec 2	Arith 1000	RD 1000 2	R File 1	Step List	M Fac 0.1	D Fac 0.5	Graph Pr	Exp Rates	
Arith 1000	Div Fac	Div Dec	Exponents 3	Step List	Angle Types	+ Fact	Ordering 1	Sub Fact	RD bar ch 1	Div 0.5	Exp mean	
Order ch 1	Angles 1	+ Fact	Ordering 0.1	Div 0.5	MMM	Dep + Fact	Comp Ang	Step Fact 1	Exponents 4	Ratio as F	Dec to Fra	
Probability	Graph 1000	+ Rationals	+ Mix 0.5	R File 2	Mult WP	Exp Expr	RD bar ch 1	Ln 0.1	Angles 2	Lip 1	RD Ration	Top Chas

How it works for students

Students can make use of our extensive video library, interactive challenges, and assessments from any computer with access to the web.

- ▶ Complete custom self-paced learning tool
- ▶ A dynamic system for getting help
- ▶ A custom profile, points, and badges to measure progress

Coaches, parents, and teachers

Not-for profit, one instructor (the Captain Kangaroo model, perhaps best for the young)

Douglas H. Fisher

Udemy <http://www.udemy.com>

The screenshot displays the Udemy website interface. At the top, there is a navigation bar with a 'Discover' button, a search bar, the Udemy logo, and links for 'Create a Course', 'My Courses', and a user profile for 'Doug Fisher'. Below the navigation bar, the main heading is 'Discover Courses'. A secondary navigation bar includes tabs for 'Featured', 'Recommended', and 'Categories', along with a search bar for courses. The featured course is 'HOW TO DRAFT A BUSINESS PLAN?' by Laurent Timmermans, described as a simple method to draft a business plan in less than 2 hours. Below this, there are five category tiles: 'MOBILE DEVELOPMENT COURSES' (16 Courses), 'TOP MARKETING COURSES' (16 Courses), 'WEB DEVELOPMENT COURSES' (22 Courses), 'ADOBE CS6 COURSES' (10 Courses), and 'TOP DESIGN COURSES' (19 Courses). A help icon is visible in the bottom right corner.

For profit, contracts with individual faculty members, variable pricing

Massive Open Online Courses

<http://cft.vanderbilt.edu/2013/03/a-conversation-about-massive-open-online-courses-moocs/>

Massive: 100s; 1,000s; 10,000s of students

Open: free or at least affordable by most

Online: on the Web

Courses: standalone, given prerequisites satisfied

Massive Open Online Courses

<http://cft.vanderbilt.edu/2013/03/a-conversation-about-massive-open-online-courses-moocs/>

Courses: standalone, given prerequisites
satisfied

Lectures (on video)

Quizzes

Assignments

Exams

Discussion Forums

- Personalization and Humanization through Technology

I'm learning this from home because my 3 month old daughter was diagnosed with a rare immune disease and is still receiving her bone marrow transplant....[She] is doing well, but our family cannot be in public.
(Ryan Murphy)

Daphne Koller: What we're learning from online education

TED Talks TEDtalksDirector · 1,428 videos

1,227,283

136,291

Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (5:11 – 6:00)

- Technological and Pedagogical Theory



Peter Norvig: The 100,000-student classroom



TEDtalksDirector · 1,428 videos

34,315

Peter Norvig: <http://www.youtube.com/watch?v=tYclUdcsdeo> (0 – 4:01)

- Pedagogy and humanization



Salman Khan: Let's use video to reinvent education

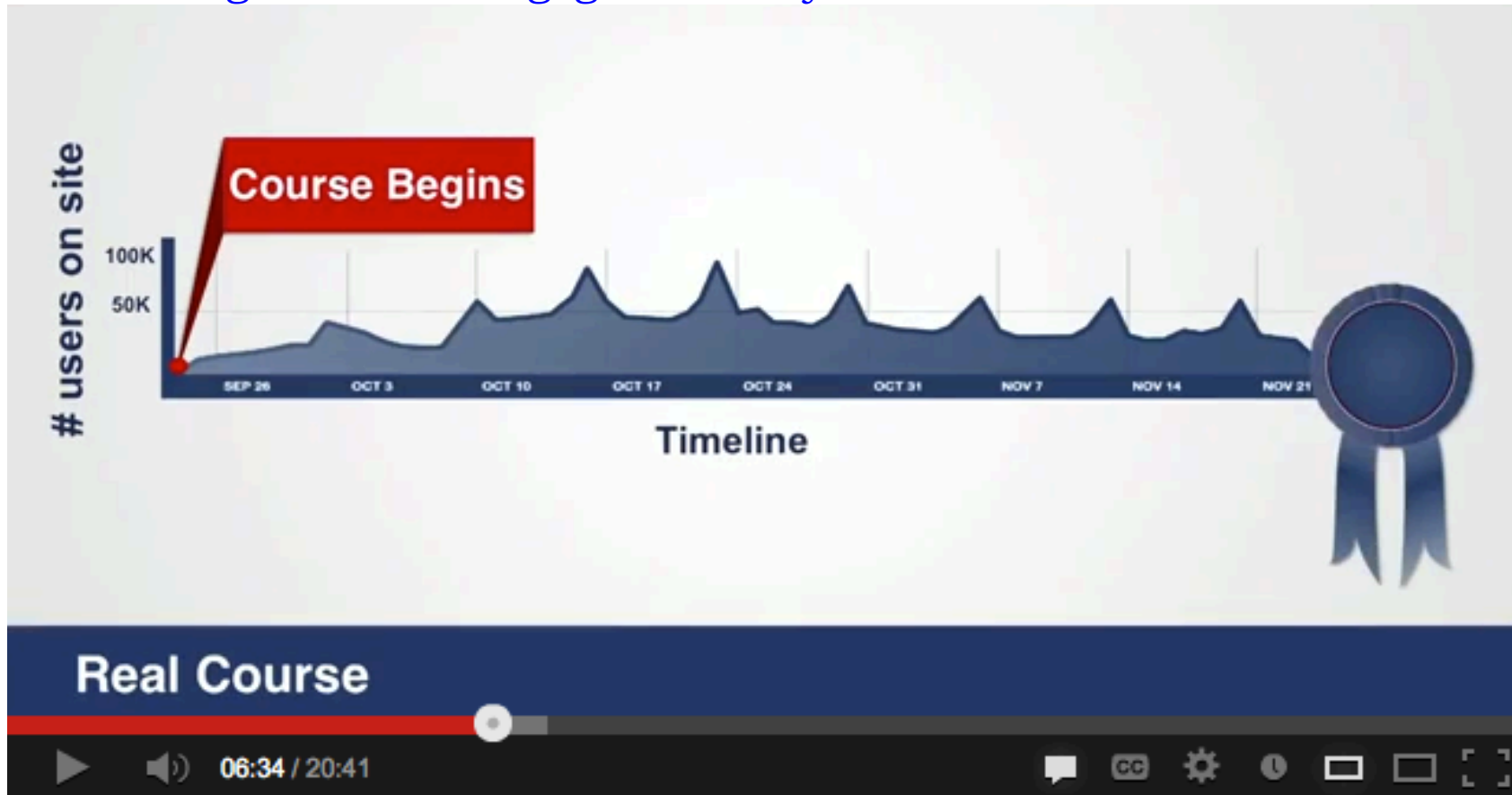


TEDtalksDirector · 1,428 videos

627,595

Salman Khan: <http://www.youtube.com/watch?v=nTFEUsudhfs> (1:36-5:20)

- Technological and Pedagogical Theory



Real Course

Daphne Koller: What we're learning from online education



TEDtalksDirector · 1,428 videos

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136,291

3,317 likes 62 dislikes

Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (5:55 – 9:37)

- Technological and Pedagogical Theory

Copper Puzzle - write code to fix the puzzle-copper.png image. The red values in the image are random noise, so they should be set to 0. The real image is in the blue and green values, which have been divide by 10.

```
image = new SimpleImage("puzzle-copper.png");  
  
for (pixel: image) {  
    // your code here  
    pixel.setRed(0);  
    pixel.setGreen(pixel.getGreen() * 10);  
  
    pixel.setBlue(pixel.getBlue() * 10);  
  
}  
  
print(image);
```

Run



Output: Correct!

10:44 / 20:41

Daphne Koller: What we're learning from online education

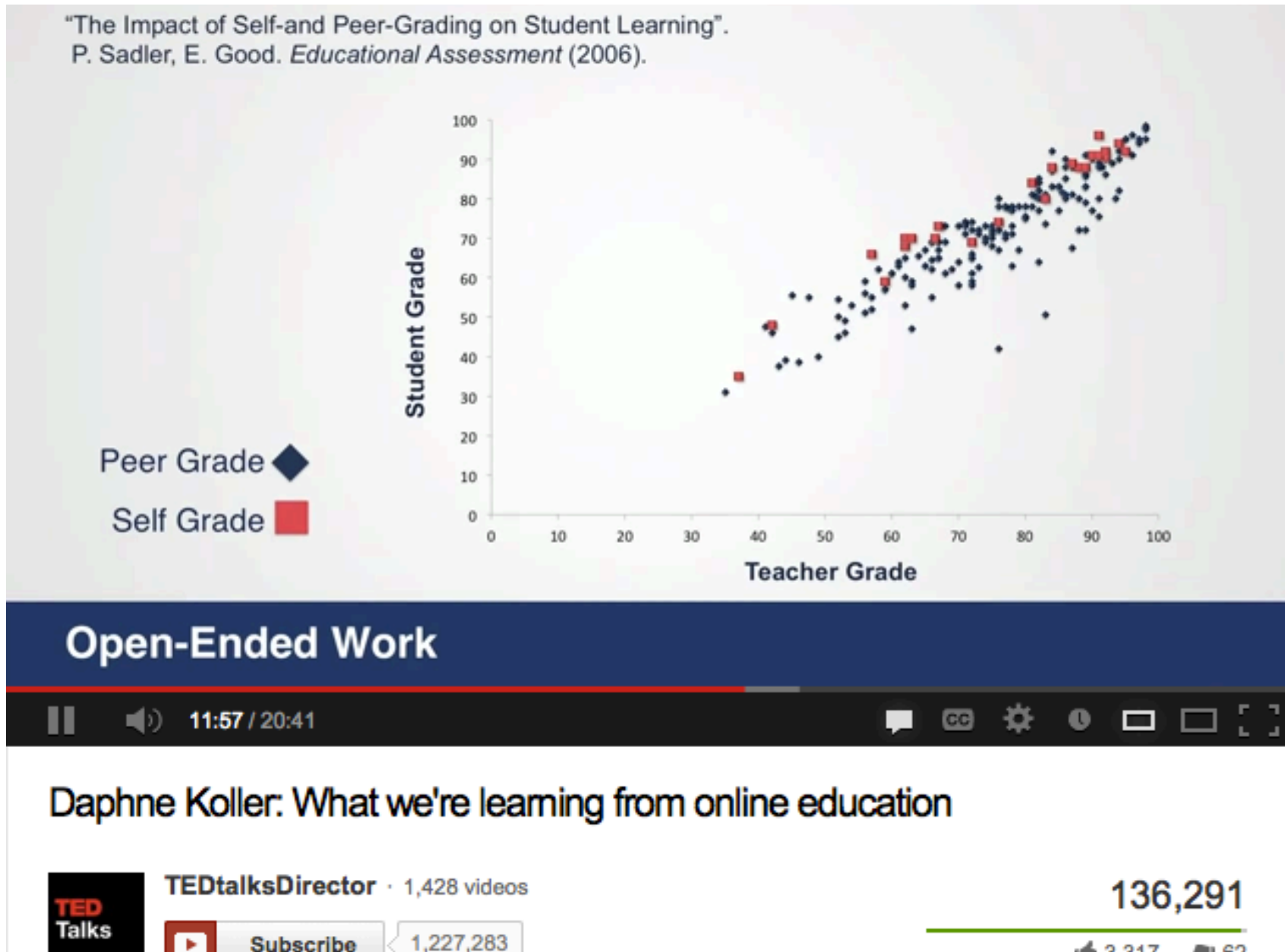
TED Talks TEDtalksDirector · 1,428 videos

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136,291

Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (9:37–10:55)

- Technological and Pedagogical Theory (Limitations and “solution”)



Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (10:55-12:14)

- Global and local learning communities

Sociology 101 Student Map

Global Community

12:30 / 20:41

Daphne Koller: What we're learning from online education

TED Talks TEDtalksDirector · 1,428 videos

136,291

Subscribe 1,227,283

Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (12:14–14:09)

- Global and local learning communities



Doug Schmidt (Virtual Office Hours)

<https://www.youtube.com/watch?v=EAscOxl5Vss&feature=c4-feed-u>
(35:43)

- Personalization

"The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring." *B. Bloom, Educational Researcher (1984).*

The graph displays three bell curves representing the distribution of achievement scores for different instructional methods. The x-axis is labeled 'Achievement Score'. The 'Lecture' method (blue dashed line) has the lowest peak. The 'Mastery Learning' method (solid red line) has a higher peak. The 'Individual Tutoring' method (green dashed line) has the highest peak. Callout boxes identify each curve.

The 2 Sigma Problem


16:38 / 20:41

Daphne Koller: What we're learning from online education




TED Talks TEDtalksDirector · 1,428 videos 136,316

Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU> (14:09-17:45)

Examples of MOOCs

coursera COURSES UNIVERSITIES ABOUT ▾  DOUG ▾

Your Courses Screenshot of <https://www.coursera.org>

	Machine Learning Aug 20th Oct 29th <hr/>	Aug 20th 2012 10 weeks long Go to class View course info Un-enroll
	Introduction to Sustainability Aug 27th Oct 22nd <hr/>	Aug 27th 2012 8 weeks long Go to class View course info Un-enroll
	Introduction to Mathematical Thinking Sep 17th Nov 5th <hr/>	Sep 17th 2012 7 weeks long Go to class View course info Un-enroll
	Software Engineering for SaaS Ended 4 months ago	May 18th 2012 5 weeks long View class archive View course info Un-enroll
	Introduction to Databases	To be announced 10 weeks long

Examples of MOOCs

coursera COURSES ABOUT ▾ DOUG ▾

Stanford University
Machine Learning

Andrew Ng
Professor of Computer Science

- Home
- Video Lectures
- Review Questions
- Programming Exercises
- Discussion Forums
- Course Schedule
- Course Information
- Course FAQ
- Octave Installation
- Help with Subtitles
- Join a Meetup
- Course Wiki

Announcements

Week 2 content's homework -- Two day extension

Dear Class,

Because of a GoDaddy.com DNS outage earlier today, the Coursera site was inaccessible for a few hours. I'm very sorry that many of you were unable to access the site. I know also that quite a few of you who had been planning to finish up the homework were worried about getting it submitted on time, and must have been frustrated by the outage, and I apologize for that also.

Given the outage, and to make sure that you can get your homework submitted, we've extended by two days the deadline for the homework for the Week 2 content, to Wednesday September 12th (11.59pm, US PDT). Coursera has also migrated its DNS service off GoDaddy to a different provider, so that a similar outage won't occur again.

Thanks again for all your hard work, and for sticking with the class. And a big congrats also to all of you who had managed to submit the homework by Monday despite the outage.

Andrew

Tue 11 Sep 2012 12:11:00 AM PDT

Homework 2 friendly reminder

Hi all,

About 58,000 of you had signed up for this offering of the machine learning class. I'm thrilled that there're so many of you still excited to learn this topic!

I also hope you're enjoying learning about machine learning and linear regression. As a friendly reminder, the homeworks for the Week 2 content (Review Questions + First Programming Exercise) are due tomorrow Monday September 10th. Doing the

Invite your friends!

Like 7.7k
Tweet 525
+1 6.9k

Upcoming Review Questions

- XII. Support Vector Machines
Due: Mon 15 Oct 2012 11:59:00 PM PDT
- XIII. Clustering
Due: Mon 22 Oct 2012 11:59:00 PM PDT
- XIV. Principal Component Analysis
Due: Mon 22 Oct 2012 11:59:00 PM PDT
- XV. Anomaly Detection
Due: Mon 29 Oct 2012 11:59:00 PM PDT
- XVI. Recommender Systems
Due: Mon 29 Oct 2012 11:59:00 PM PDT
- XVII. Large Scale Machine Learning
Due: Mon 5 Nov 2012 10:59:00 PM PST
- XVIII. Application: Photo OCR
Due: Mon 5 Nov 2012 10:59:00 PM PST

Upcoming Programming

Screenshot of <https://class.coursera.org/ml-2012-002/class/index>

Examples of MOOCs

coursera COURSES ABOUT ▾ DOUG ▾

University of Illinois at Urbana-Champaign
Introduction to Sustainability

Jonathan Tomkin, Ph.D.
University of Illinois at Urbana-Champaign

Announcements

★ **Reminder to submit final materials for the Project Achievement and Forum**

Achievement Badges by tomorrow

Just a quick reminder that tomorrow (Sunday) is an **important deadline** for people pursuing either the Project Achievement Badge or the Forum Achievement Badge. Those pursuing the Project Achievement Badge should post their cover sheet and final version of their project (see the [Week 7 Milestone](#) for details). Those pursuing the Forum Achievement Badge should **post samples of their best contributions to the discussion forum here**.

Sat 13 Oct 2012 12:10:00 PM PDT

Week 6 in Review

Hi everyone,

Many interesting comments in the forums this week. Permaculture (which would base our living and agricultural systems around ecosystem principles) was put forward ([Permaculture as an alternative](#), [Project Discussion - Sustainable Family biotype](#)) as a sustainable food production system. Although it clearly takes into account the externalities that conventional farming done not – there is explicit concerns in permaculture about caring for soil, fossil fuel use, avoiding monocultured crops, and reducing synthetic fertilizer, there was the question of whether permaculture is scalable for the world population, and whether or not the societal/lifestyle change required is feasible (e.g. [Hardy Cook](#), [Andrew Warren Nute](#)).

Another observation was, given the high grain and water requirements of meat production, that we would be more sustainable if we were vegetarian (e.g. [Lisa Farrell - You want sustainable food? Go vegetarian](#)). Again, there is the question of what people can be expected to give up in consumption (for a broader context on our options, I recommend this post and its comments: [Angus McKenzie: Behaviour Change is the Key to Food Security](#)), and it's been noted that we could give up many things and be more sustainable. This question illustrates that, in the developed world, there is the luxury of a large buffer between current levels of consumption and Malthusian conditions. Given that individuals don't wish to reduce consumption unnecessarily, it might be that unpalatable decisions need to be made. If we are unsustainable, the challenge would appear

Upcoming Quizzes

- [Week 7 Quiz 1](#)
Due: Tue 16 Oct 2012 9:55:00 PM PDT
- [Week 7 Quiz 2](#)
Due: Tue 16 Oct 2012 9:55:00 PM PDT
- [Week 8 Quiz 1](#)
Due: Sun 21 Oct 2012 9:55:00 PM PDT
- [Week 8 Quiz 2](#)
Due: Sun 21 Oct 2012 9:55:00 PM PDT

New Lectures

- Week 7, Module 2: Environmental Policy
- Week 7 Module 3: Environmental Policy Assessment
- Week 7, Module 4: Environmental Economics
- Week 7, Module 5.1: Application of Environmental Economics and Policy (Part 1)
- Week 7, Module 5.1: Application of Environmental Economics and Policy (Part 2)
- Week 7, Module 5.3: Application of Environmental Economics and

Home
Syllabus
How to Pass the Class
Course Orientation (Mandatory; Start Here)
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
End-of-Course Survey
All Forums
Quiz Results
Help With Subtitles

Screenshot of <https://class.coursera.org/sustain-2012-001/class/index>

Massively Open Online Courses: Focus on Access, Cost, and ... Quality for individuals

Accessibility and affordability

“MOOCs, have the potential to make quality education a basic, international human right.”★

(but “MOOCs may pose a grave threat to financially struggling colleges and universities with less prestigious brand names.” ★)

★Stephen Smith, “The World-Wide U”, American Radio Works,
[americanradioworks.publicradio.org/features/tomorrows-college/
keyboard-college/moocs.html](http://americanradioworks.publicradio.org/features/tomorrows-college/keyboard-college/moocs.html)

Consortium on Urban and Metropolitan Universities (CUMU)
mission: *“... to use the power of their campuses in education, research, and service to enhance the communities in which they are located.”* (<http://www.cumuonline.org/about.aspx>)

How can MOOCs be folded into CUMU’s mission?

OSHER Course Lifelong Learning on the Web (Resources)

Overview Videos

Daphne Koller: <http://www.youtube.com/watch?v=U6FvJ6jMGHU>

Salman Khan: <http://www.youtube.com/watch?v=nTFEUsudhfs>

Peter Norvig: <http://www.youtube.com/watch?v=tYclUdcsdeo>

Find an online course or video collection that interests you

COURSERA <https://class.coursera.org/>

EdX <https://www.edx.org>

Udacity <http://www.udacity.com>

Udemy <http://www.udemy.com>

Khan Academy <http://www.khanacademy.org>

YOUR COURSES



Maps and the Geospatial Revolution

Starts in 16 days

Jul 17th (5 weeks long)



https://www.coursera.org/course/maps

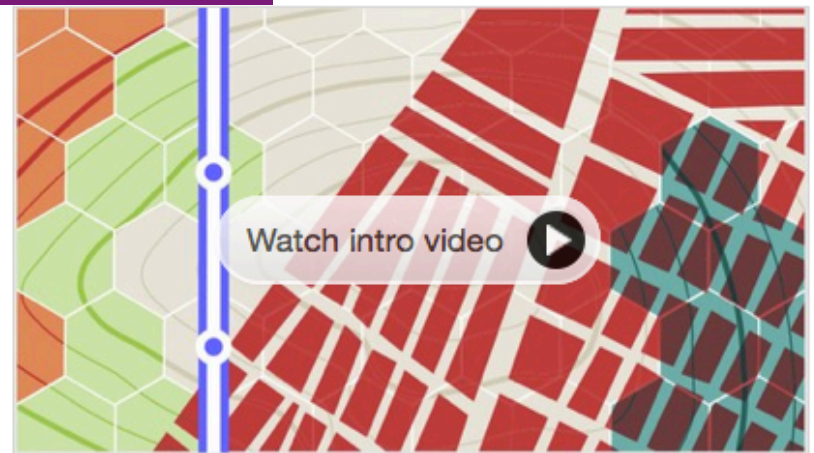


Maps and the Geospatial Revolution

Dr. Anthony C. Robinson

Learn how advances in geospatial technology and analytical methods have changed how we do everything, and discover how to make maps and analyze geographic patterns using the latest tools.

Workload: 6-9 hours/week



A MOOC that I have signed up for!

Sessions:

Jul 17th 2013 (5 weeks long)

You are enrolled!

Future sessions

Add to Watchlist

450 133 1.2k

Tweet +1 Like

But ...

- What of using MOOCs and ***other online material*** to increase the ***BANG for the buck*** of the ON-CAMPUS and other in-group experience
 - + undergraduate
 - + K-12
 - + adults over 50 (i.e., OSHER!)

Proposal

- An OSHER course that is wrapped around a MOOC
 - ... with local faculty and student facilitators

Next Week

- Using online material to increase bang for the buck on campus
- Other forms of online and digital learning opportunities
- Crowd-sourcing for education (e.g., Wikimedia, such as Wikipedia and Wikibooks)
- Behind the Scenes in creating a MOOC
- Creating your own content
- Another Proposal (Writing a Wikibook)
- Preview:

<https://my.vanderbilt.edu/douglasfisher/files/2013/06/DougFisherMOOCsOnCampusPresentation.pdf>

And after that we'll be doing some drilling down (e.g., cheating, privacy) and tailoring to your interests