



---

# The Developing World of MOOCs

---

Anant Agarwal  
edX.org





Courtesy Eric Klopfer





Photo credit: Piotr Mitros

# A Non-Profit Venture

~1M Learners from 192 Countries



Take great courses  
from the world's  
best universities

[register now](#)



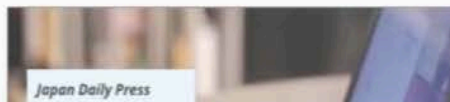
- Increase access to learning worldwide
- Improve on-campus education
- Open source platform
- Learning pedagogy research



## EDX COURSES

Our courses are designed to be interesting, fun and rigorous. They are the best courses, from the best professors, and the best schools and span a variety of subjects, from science and technology to the humanities.

[see all courses](#)

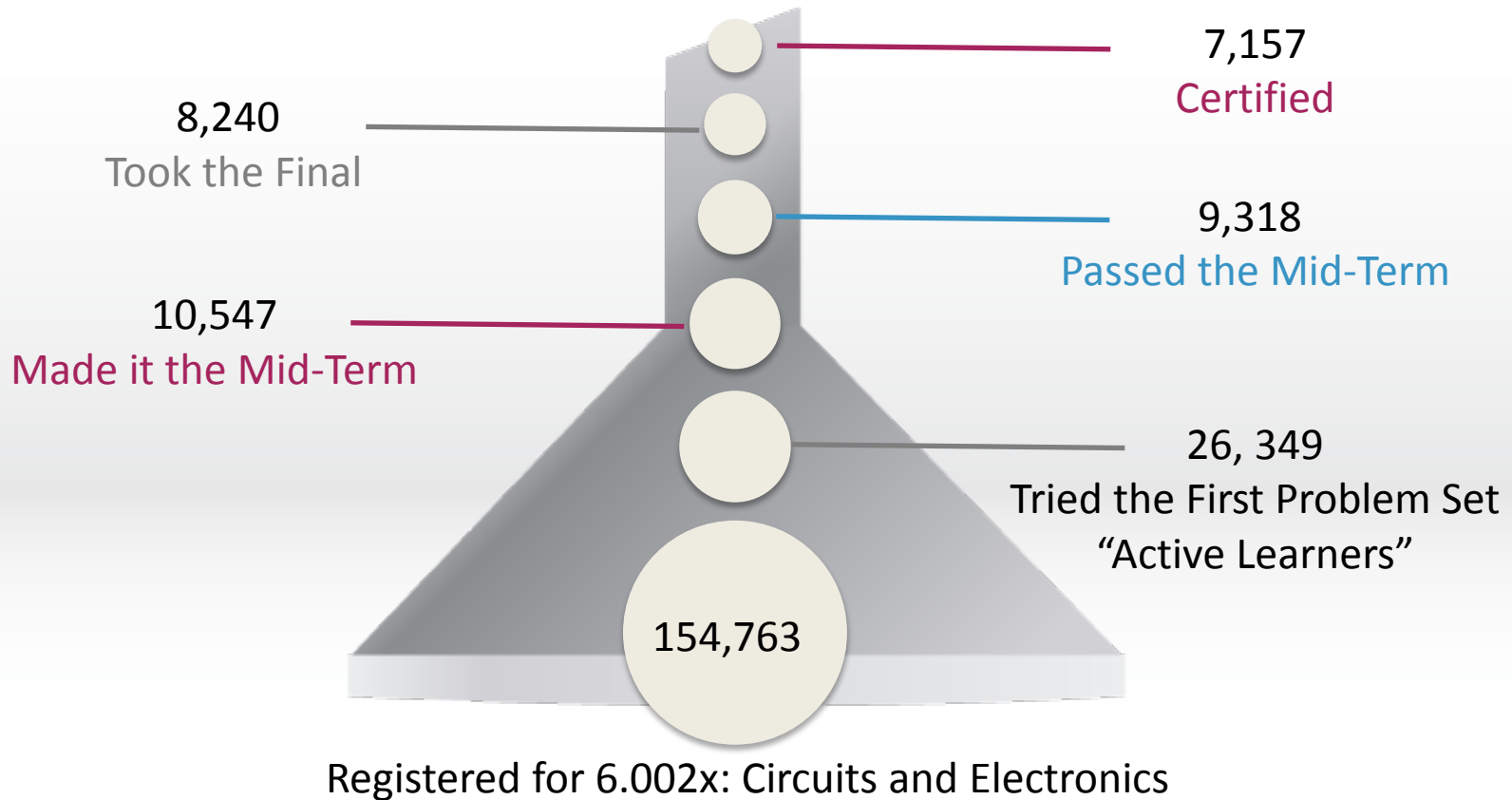


## NEWS & ANNOUNCEMENTS

Stay informed about the latest stories being shared around the world

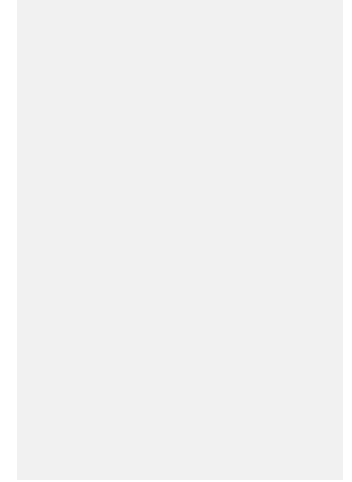
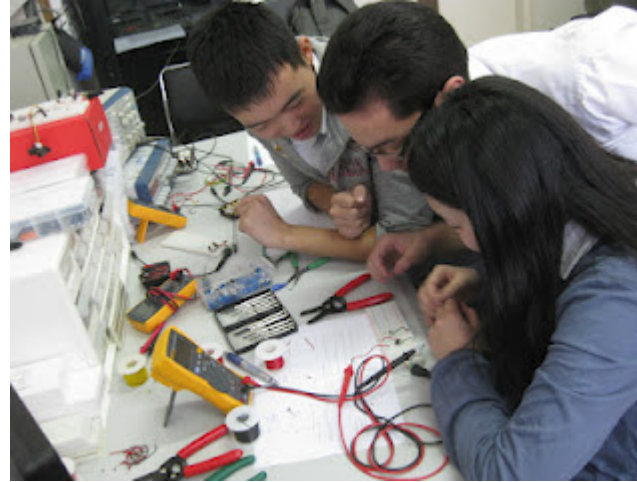


# 155,000 Students Enrolled in First Course



*Same staff resources as 150 person on-campus class*

# The New Classroom



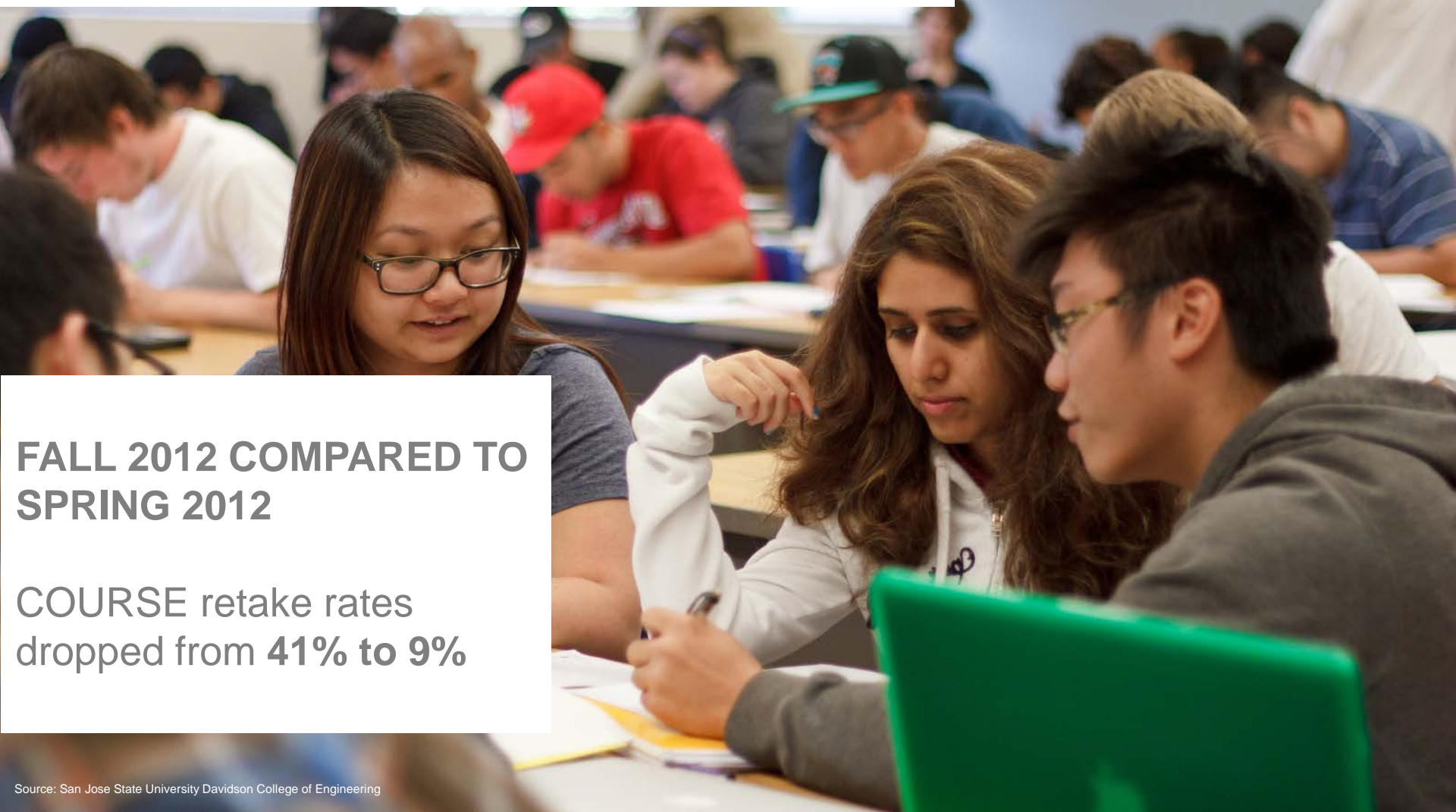
Where is this?



# Blended Learning Pilot



San Jose State University



**FALL 2012 COMPARED TO  
SPRING 2012**

**COURSE retake rates  
dropped from 41% to 9%**

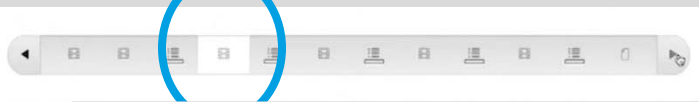
Source: San Jose State University Davidson College of Engineering



# Blended Learning Pilots throughout the World



- Week 1
- Foldit
- Week 2
- Week 3
- Week 4
  - Weekly Overview
  - Goals and Objectives
  - Lecture 8: Basics of Human Genetics69 minutes
  - Lecture 9: Biochemical Genetics68 minutes
  - Lab Videos7 minutes
  - Deep Dives7 minutes
  - Practice Problem Set: Genetics IIPractice Problem Set
  - Resource Boxes
- Week 5 - Exam 1
- Week 6
- Week 7



AUTOS



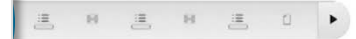
Download

Show

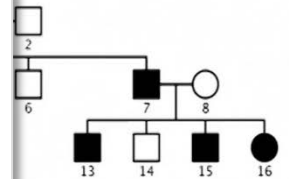
“

Learning and retention is related to depth of mental processing.  
- Craik and Lockhart, 1972

”



inheritance for this pedigree. Choose from the list



New Post

Week 7

Week 8

[Overview](#)[Week 1](#)[Week 2](#)[Week 3](#)[Week 4](#)

Incremental Analysis

Lecture Sequence

Dependent Sources and  
Amplifiers

Lecture Sequence

Week 4 Tutorials

Homework 4

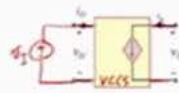
Homework due Oct 07, 2012  
at 00:00 UTC

Lab 4

Lab due Oct 07, 2012 at  
00:00 UTC[Week 5](#)[Week 6](#)[Midterm Exam](#)[Week 7](#)[Week 8](#)[Week 9](#)[Week 10](#)[Week 11](#)[Week 12](#)

## S8V5: ANOTHER DEPENDENT SOURCE EXAMPLE

## Another dependent source example



And you have the output port here.

So what I'm going to do is in this particular circuit, I'm going to connect a voltage source at the input, an independent voltage source at the input,  $V_1$ .

And I'm going to connect the output as follows.

I'm going to connect a resistor to the output as follows.

I'm going to call it  $R_L$  for load resistor.

This terminal is going to be connected to ground.

And then I'm going to connect the  $R_L$ .

0:23 / 3:34 SPEED 1.50x

Download video [here](#).

More information given in [the text](#).

Lecture Slides Handout [Clean] [Annotated]

Show Discussion

New Post



Overview

Week 1

“

Students who were able to press a continue button to go on to the next segment performed better...

- Mayer 2003  
*J. Educational Computing Research*

”

Week 9

Week 10

Week 11

Week 12

Show Discussion

New Post



[Overview](#)[Week 1](#)**Why Solid-State Chemistry?**

Learning Sequence

**Modern Chemical Concepts  
and Periodicity of the  
Elements**

Learning Sequence

**The Electron and Light**

Learning Sequence

**Additional Study Material****Problem Set 1**

Homework due October 28

[Week 2](#)[Week 3](#)[Week 4](#)[Exam 1](#)[Week 5](#)[Week 6](#)

## H1P2: DECOMPOSITION OF AMMONIUM NITRATE

Solid  $\text{NH}_4\text{NO}_3$  (ammonium nitrate) decomposes on heating to  $400^\circ\text{C}$ , forming  $\text{N}_2\text{O}$  gas and water vapor,  $\text{H}_2\text{O}$ .

(a) Write a balanced chemical equation.

(b) Calculate the number of grams of  $\text{H}_2\text{O}$  that will form on decomposition of 0.10 mole of ammonium nitrate.

**Check**

Show Discussion

New Post

[Overview](#)[Week 1](#)**Why Solid-State Chemistry?**

Learning Sequence

**Modern Chemical Concepts  
and Periodicity of the  
Elements**

Learning Sequence

**The Electron and Light**

Learning Sequence

**Additional Study Material****Problem Set 1**

Homework due October 28

[Week 2](#)[Week 3](#)[Week 4](#)[Exam 1](#)[Week 5](#)[Week 6](#)

## H1P2: DECOMPOSITION OF AMMONIUM NITRATE

Solid  $\text{NH}_4\text{NO}_3$  (ammonium nitrate) decomposes on heating to  $400^\circ\text{C}$ , forming  $\text{N}_2\text{O}$  gas and water vapor,  $\text{H}_2\text{O}$ .

(a) Write a balanced chemical equation.

(b) Calculate the number of grams of  $\text{H}_2\text{O}$  that will form on decomposition of 0.10 mole of ammonium nitrate.

[Show Discussion](#)[New Post](#)



Oh

“

Rapid feedback has a significant and positive effect on student performance when compared to no rapid feedback.

- *Chen, Whittinghill, Kadowec 2010*

”

u... :~}

# Virtual Game-Like Laboratory



## Overview

Welcome to 6.002x  
Lecture Sequence

edX Tutorial  
Lecture Sequence

Using the Tools  
Lab

Circuit Sandbox  
Lab

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Midterm Exam

Week 9

## CIRCUIT SANDBOX

Here's a sandbox where you can experiment with all the components we'll discuss in 6.002x. If you click  
ter time.

“

Tell me and I forget.  
Teach me and I remember.  
Engage me and I learn.  
- Benjamin Franklin

”



edX Discussion - 3.091x

MITx 6.002x: Circuits & Ele... Celtics, Patriots and Red Sc...

https://www.edx.org/courses/MITx/3.091x/2012\_Fall/discussion/forum/3091x\_2012\_Fall\_General/threads/507b6ba6792fb5270000008a

General

SORT BY: DATE VOTES COMMENTS

Getting Started +0 1

SKYPE GROUP FOR EDX +0 4

Welcome! +0 0

anybody from nigeria +0 0

are the videos downloadable +0 2

Hi +0 0

Unable to get textbook course material page to work +0 3

Hello! From Miramar! +0 0

Can someone please explain the dog/cat references? +1 1

Instructions to get my Chrome browser to parse formulas correctly, please. +1 2

Hello from NYC. +2 8

## Welcome!

anonymous about 4 hours ago

Welcome! I am from Brazil and I hope a great and exciting course. Let's go!

Edit Delete Close

Post a response:

**B I** | | |

PREVIEW

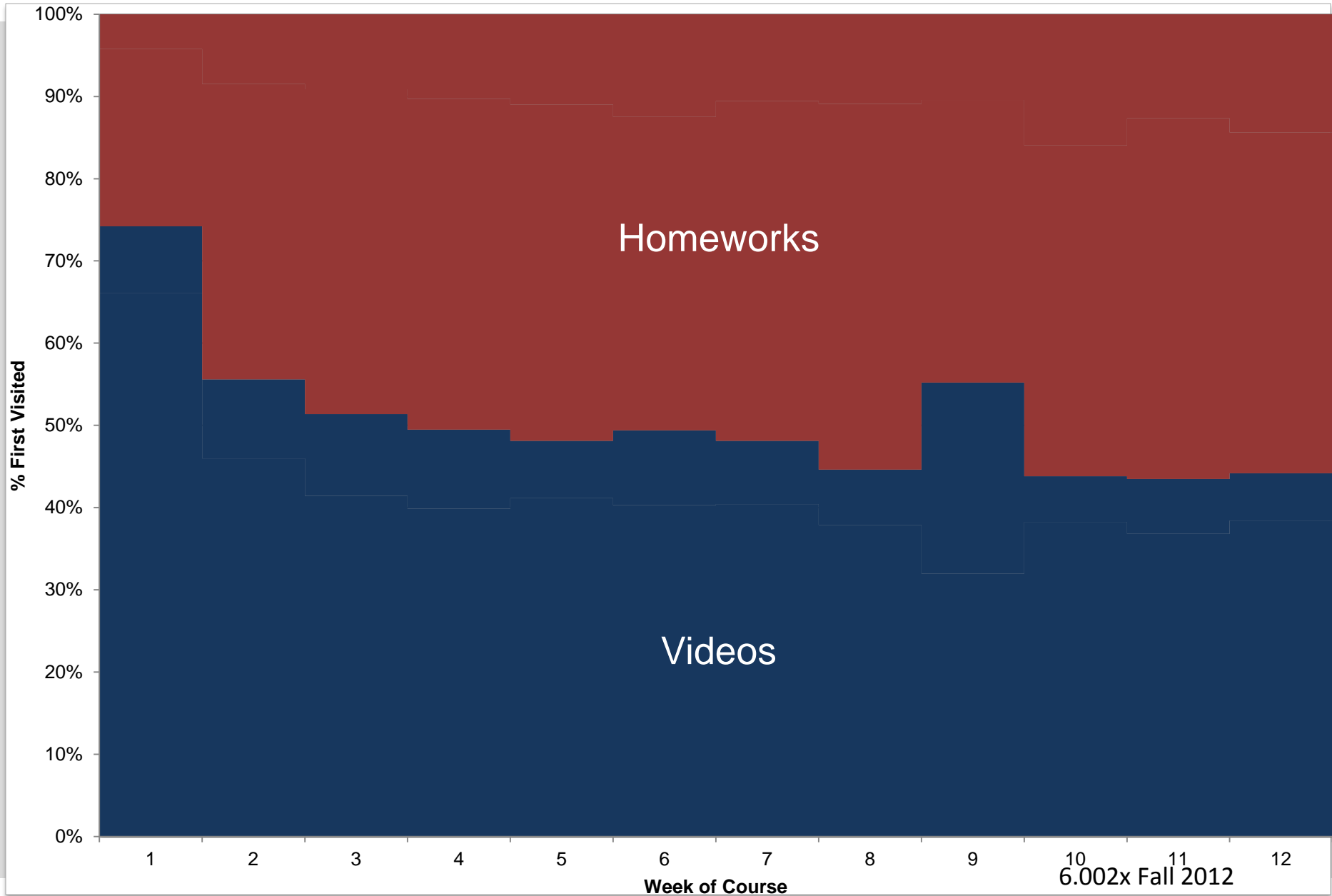
## Campus Students Identified Three Key Components of the Online Course that they Particularly Liked

Ability to stop and  
pause video  
lectures

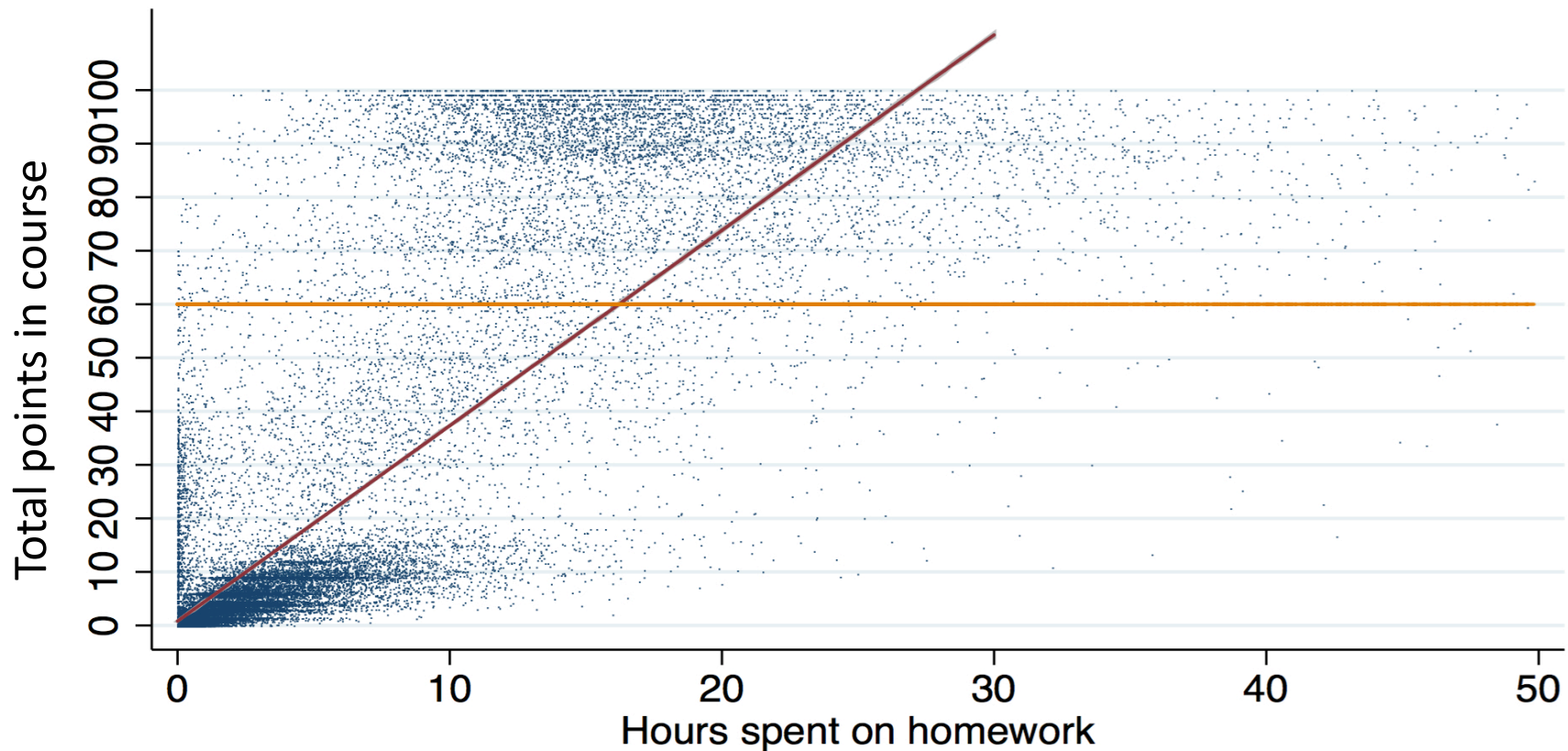
Immediate  
feedback on  
homework

Immediate  
Response from  
External Discussion  
Forum

# What do Students Visit First?



# Hours spent on homework in relation to total points in course



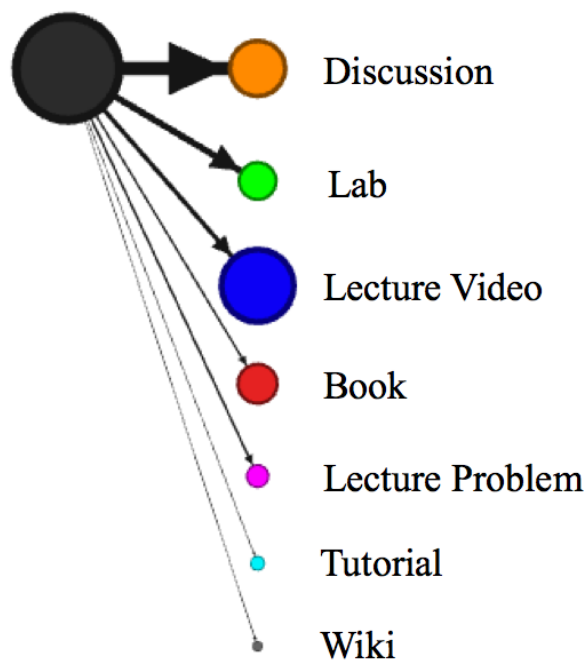
This project is supported by NSF grant No. DRL-1258448

# Research with Learning Big Data

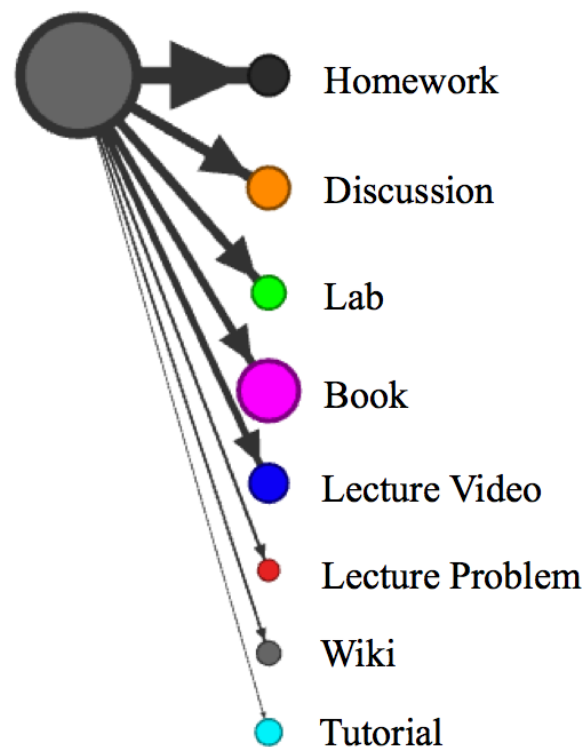
## What Resources are Learners Accessing

Resource area  $\sim$  time spent

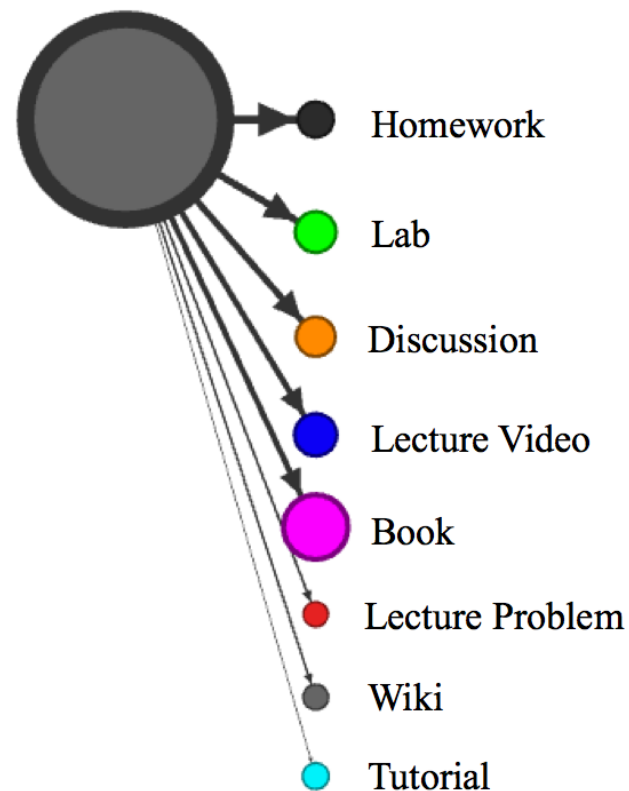
(A) Homework



(B) Midterm Exam



(C) Final Exam



# Learner Activity Profile – Deadlines Work!

