Reinventing Education

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edX.org
edX: A Not For Profit Venture

Open source **Platform**

**Portal** for learning edx.org

**Pedagogy** research on learning using “big data”

**Production** support to ensure high quality

*Founding partners Harvard and MIT have committed $60M to the venture*
155,000 Students Enrolled in First Course

8,240 Took the Final

10,547 Made it the Mid-Term

7,157 Certified

9,318 Passed the Mid-Term

26,349 Tried the First Problem Set

154,763 Registered for 6.002x: Circuits and Electronics

*Same staff resources as 150 person on-campus class*
SUCCESS ON CAMPUS: PRELIMINARY FINDINGS

Result from San Jose State University in Silicon Valley:

- Course retake rate drops from 41% to 9% when compared to previous offerings

Source: San Jose State University College of Engineering

Expanding to 11 Cal State campuses in Fall 2013
Anatomy of an edX Online Class

PART 1: TODAY: SEARCH IN THE PRESENCE OF UNCERTAINTY

Worst-Case vs. Average Case

Idea: Uncertain outcomes controlled by chance, not an adversary!

about our actions having unknown results, but rather than thinking that the results are worst case, we should be thinking about some kind of average case.

And we should be thinking that those aren’t really min nodes, but they’re some kind of chance node.

And the general idea for today is going to be to think about the case where all uncertainty is controlled by chance, and not by an adversary.
Learning Sequences Promote Active Learning

*Learning and retention is related to depth of mental processing.*

— Craik and Lockhart, 1972
Rich Set of Autograded Exercises Provide Instant Feedback

**Chemical Equations**

H1P2: DECOMPOSITION OF AMMONIUM NITRATE

Solid NH₄NO₃ (ammonium nitrate) decomposes on heating to 400°C, forming N₂O gas and water vapor, H₂O.

(a) Write a balanced chemical equation.

(b) Calculate the number of grams of H₂O that will form on decomposition of 0.10 mole of ammonium nitrate.
Virtual Game-Like Laboratory
Long Essay Grading using AI Assessment (ML)

Instructor versus machine

Instructor versus another instructor

Free form assessment on edX:
AI assessment
Peer assessment
Self assessment
Research with Learning Big Data

What Resources are Learners Accessing

Resource area ~ time spent

(A) Homework
- Discussion
- Lab
- Lecture Video
- Book
- Lecture Problem
- Tutorial
- Wiki

(B) Midterm Exam
- Homework
- Discussion
- Lab
- Book
- Lecture Video
- Lecture Problem
- Wiki
- Tutorial

(C) Final Exam
- Homework
- Lab
- Lecture Video
- Book
- Lecture Problem
- Wiki
- Tutorial

Pritchard http://RELATE.MIT.edu
Video Snippets

Why did this (temp insensitivity) happen? Our next Aha! Insight:

\[ V_0 = \frac{V_1 R_2}{R} \]

Suppose I perturb the circuit... (e.g. force \( V_0 \) momentarily to 12V somehow).

Personalization effect - Mayer 2003
Welcome!

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

Post a response:

- B
- I
- Code
- Size
- Color
- Text
- Rules
- Font
- Link

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Discussion Forum

Getting Started
-0

SKYPE GROUP FOR EDX
-0 4

Hello from NYC.
+2 4

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

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