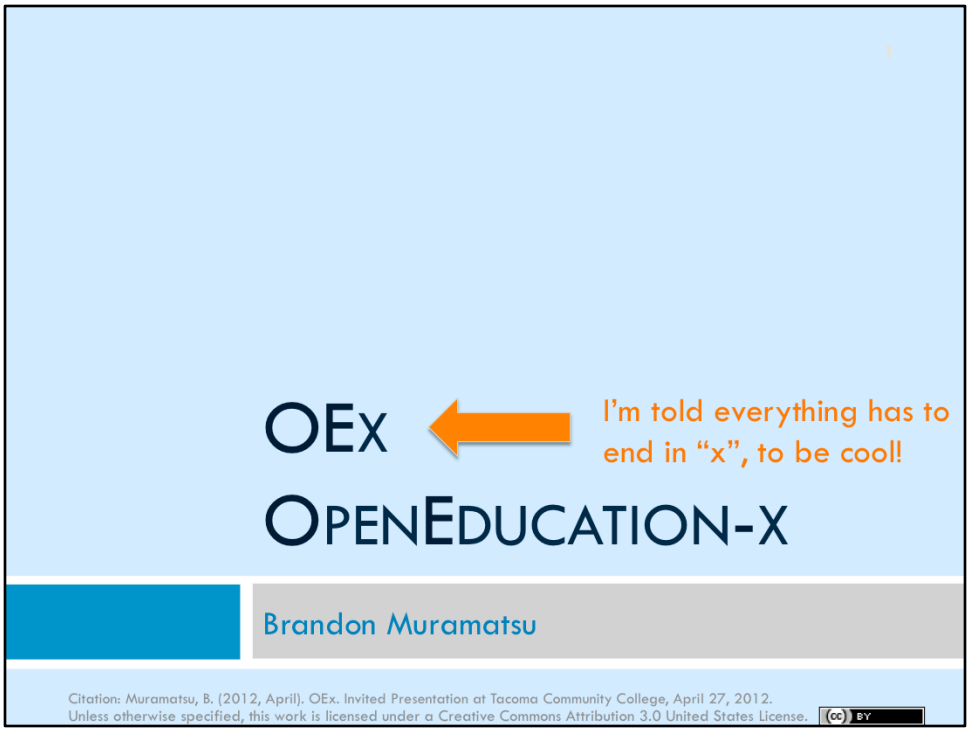

This work builds upon these two presentations, both licensed

Muramatsu, B., & Runyon, J. (2012, February). Demystifying open educational resources. Preconference workshop at eLearning 2012, Long Beach, CA.

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Outline

3

- Introductions
- Things that interest me…
- What is this "Open" thing I keep hearing about?
- Let's think about Open differently!
- What's interesting in "Open" today?
- What does this all mean for you?

Outcomes

4

- **A healthy discussion!**
- Understand the scope of the Open landscape
- Understand current trends and implications of Open
- Identify something to take with you… (hopefully)
  - How will you adopt, produce, or encourage the use of Open?
  - What does Open mean for Tacoma Community College?

5

Introductions

Please introduce yourselves

- Name, department, role

And describe your expectations.

Expectations

6

- All the newness, the change, would like faculty to be deeply involved
- Understand how to support for the long term
- Find the wealth of open resources
- Help to create their own
- Listen to perceptions about OER, engaging in using and creating open resources
- Institutional barriers—for example CTC not serving all the students they could, how can Open enable that
- Use library resources in courses, learn from courses to work with students and faculty
- How can we do more with OER
- Understand OER better, to help faculty and integrate into their courses
- Exploit everything we know about OER, how does OER improve the lives of the students
- How to help make project more successful

My bonafides…

7

- B.S. & M.S. in Mechanical Engineering
- Taught multimedia design and open education
- ~10 years developing educational digital libraries NEEDS/SMETE.ORG/MERLOT/NSDL
- ~8 years in Open education
- Worked at UC Berkeley, Cal State University Office of the Chancellor, COSL, MIT
- Work with lots of really smart people all over the world

- Four Letter Words…Been There, Done That
  - Learning Objects, Metadata, Digital Libraries
  - MIT (oh wait)

8

Things that interest me…

Things that interest me

9

1. Certification and micro-certifications
   - For courses, and for learning concepts
   - P2PU challenges, badges, and so on
2. Modularity and disaggregation of content
3. Content from non-traditional academic sources
   - TED-Ed, MIT+K-12 (Khan Academy collaboration), etc.

Collectively…

- If publishers are being disrupted Open Textbooks
- If faculty and non-faculty are producing OER
- Might traditional certification / accreditation be next?

Things that interest me (cont.)

10

4. Moving from passive content to active experiences
5. Formative assessment embedded in content
   - Inline, not a separate system / experience
   - Automatically scored (adaptive and customized)
   - Not just for high-stakes testing (e.g., SAT, GRE)

What intrigues me…

- Giving control to students and faculty, moving to individual formative feedback
- Building an assessment player / embedded assessment engine.

Things that interest me (cont.)

11

6. Streamlined content creation enabling content management on top of simple authoring
   - Workflow, and systems to produce and use materials (I really wish Tom would figure this out for me! :P)

12

What is this "Open" thing I keep hearing about?

What have you heard about "Open"?

13

- Free
- Shared
- Choices
- Ability to adapt
- Cost effective
- Ability to tailor & build your own
- Creative Commons
- Freedom of info and use
- Quality assurance
- Varied availability by disciplines
- Available to anybody
- Digital
- Often multimedia
- Accessibilty—more accessible to some and less to others

Open… Education

14

- Source
- Content / Educational Resources
  - CourseWare / Courseware
  - Textbooks
  - Courses
- Educational Practice
- Access / Journals
- Knowledge
- Policy

We're going to focus on these items

What are some benefits and challenges of Open?

15

Benefits

Challenges

16

Let's think about Open differently!

How do you define "Open Educational Resources"?

17

OER: l'innovation du jour?

18

- We're going to talk about OER writ large.
- We're not going to bore you with definitions! (Well, we'll try!)
- We're not going to get all religious about OERs!

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OER: l'innovation du jour?

19

- I'd like you to think about OER as an entry to a conversation
  - A conversation about teaching, crafting courses, & more importantly **sharing** courses and course materials
  - A conversation about **collaborating** with peers, and even students

This doesn't sound like it's specific to OERs does it?

Poll: Do you…

20

- Talk about courses with peers?
- Borrow course materials, teaching techniques, sources?
- Share materials back with your peers?
- Provide attribution for what you've borrowed?

OER is all of these things!

21

- At it's heart, OER is about doing these sorts of things!
- And, it's about encouraging sharing of materials and practices…
- And, it's **clearly communicating what others are allowed to do with the materials**…

Ok, let's get a bit more formal

22

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OER: A Definition

23

OER *are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that* ***permits their free use or re-purposing by others****. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.*

Atkins, Daniel E., John Seely Brown, Allen L. Hammond. (2007-02). "A Review of Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities." Menlo Park, CA: The William and Flora Hewlett Foundation. p. 4.

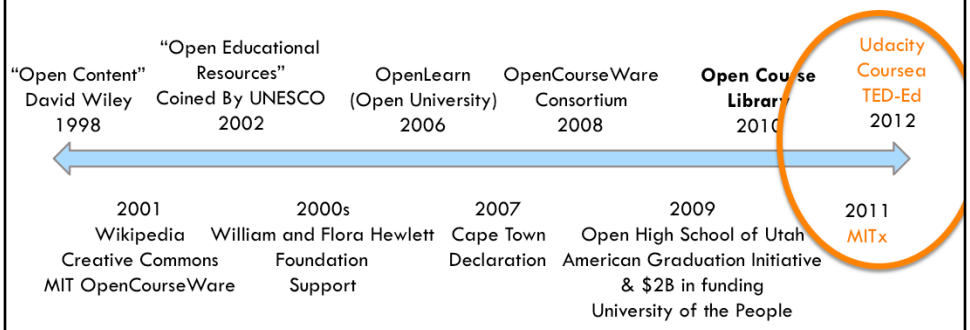
Going beyond "Traditional" OE"R"

24

- OERs are a part of Open Education
- OERs focus on resources
  - They have been getting a lot of attention at the federal and state levels
  - They are primarily course materials and open textbooks
  - Many have been developed by academics, colleges and universities
- But, Open Education is the bigger concept
  - Sharing, availability and access

Open Education in the Modern Era

25



Based upon: WikiEducator. (2012). OER Timeline. http://wikieducator.org/OER_timeline

Importance of Open Education

26

Potential for…

Open is a means to an end: Improved learning

- Changing the nature of the educational experience
  - Smaller chunks, focused objectives
  - MOOCs, alternate credentialing
- Reigning in costs without sacrificing quality or access
  - Student and institutional
- Reclaiming control
  - From publishers, from static content
  - Enabling flexibility to mix and match

27

Set them 

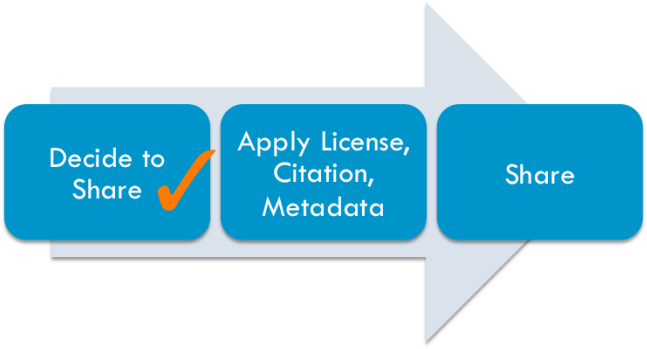
Creating an OER

Demonstration

Photo: Patrick McAndrew, CC-by

Let's make an OER

28



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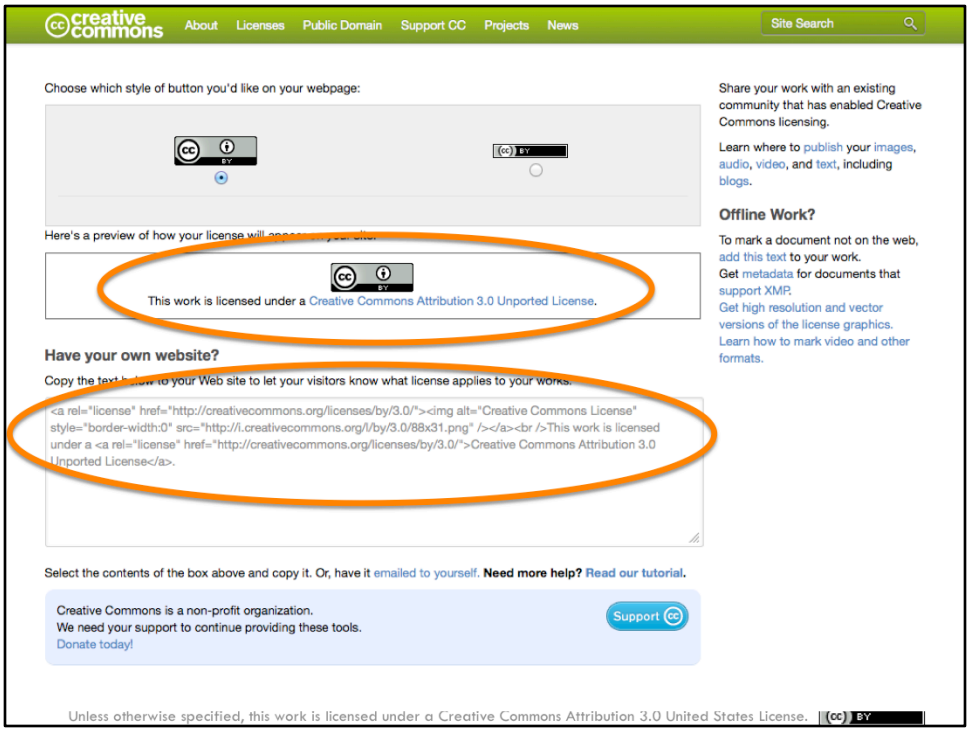
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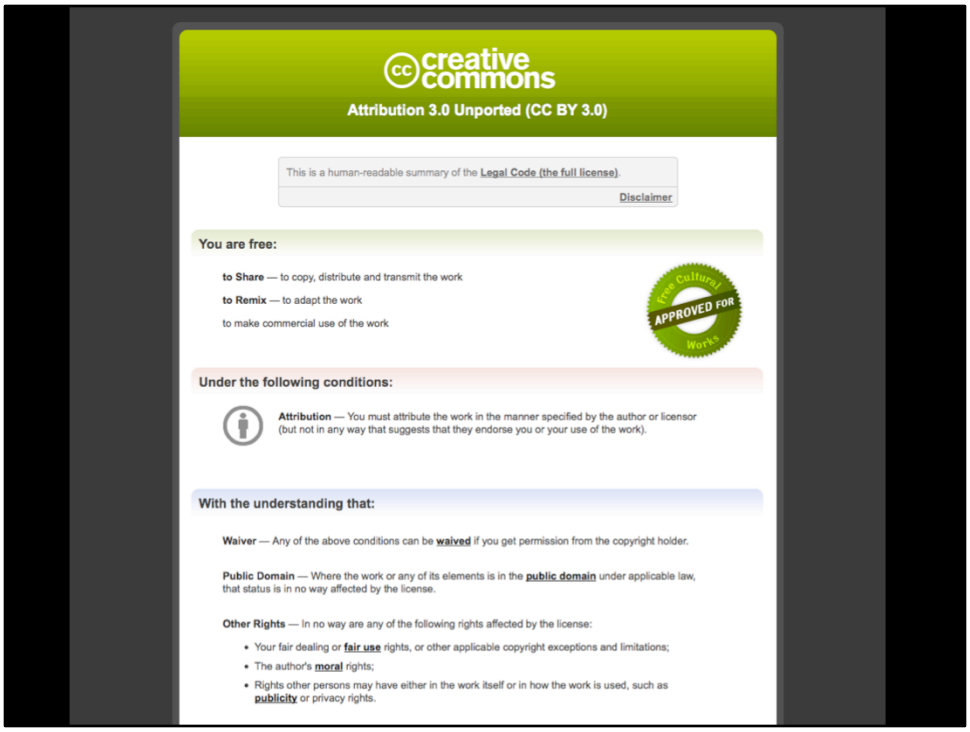

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Let's make an OER

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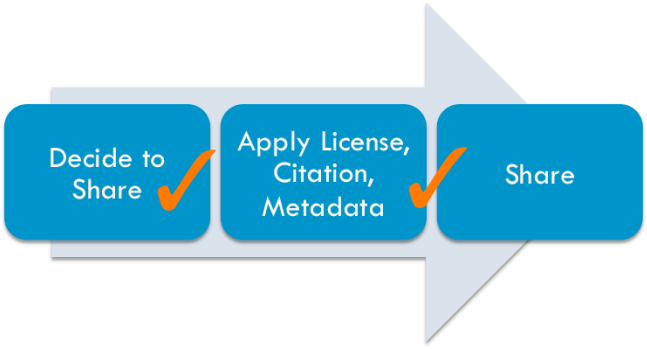


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Brandon Muramatsu has been involved in the development of learning technologies from courseware to educational digital libraries since 1993. He is interested in the development of production-level services and tools for educators and learners to develop, use, reuse and share digital learning resources, especially open educational resources. He is currently working at the Office of Educational Innovation and Technology at MIT to transform learning technologies from innovative research to sustainable production services. Brandon Muramatsu earned his B.S. (1993) and M.S. (1995) in mechanical engineering from the University of California, Berkeley.
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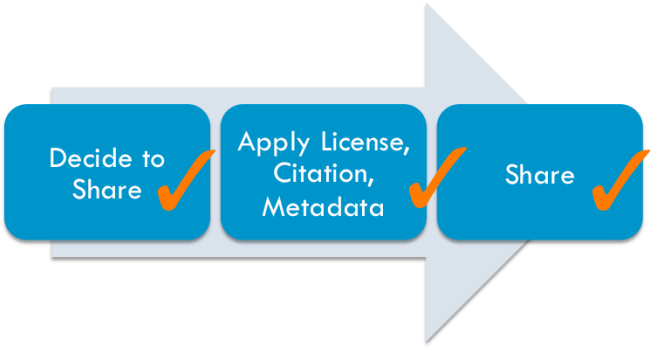
Student readiness for college is of great concern at the local and national levels. Open access to high-quality educational materials will increase the number and diversity of adults who are

Let's make an OER "That was easy!"

36



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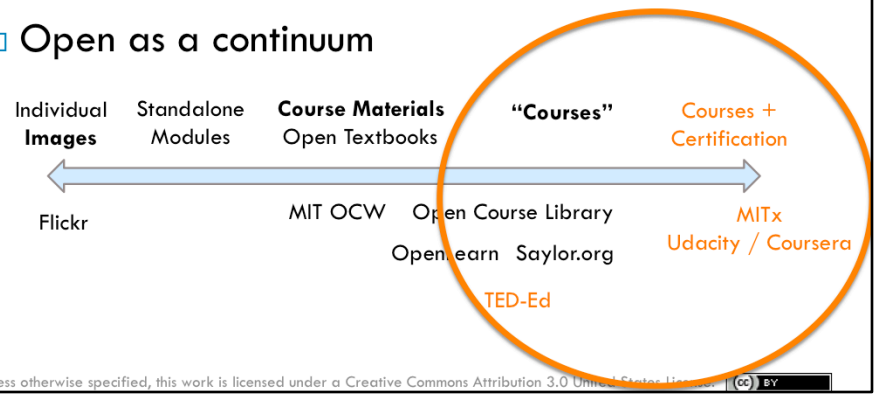
What's interesting in "Open" today?

Disrupting the status quo

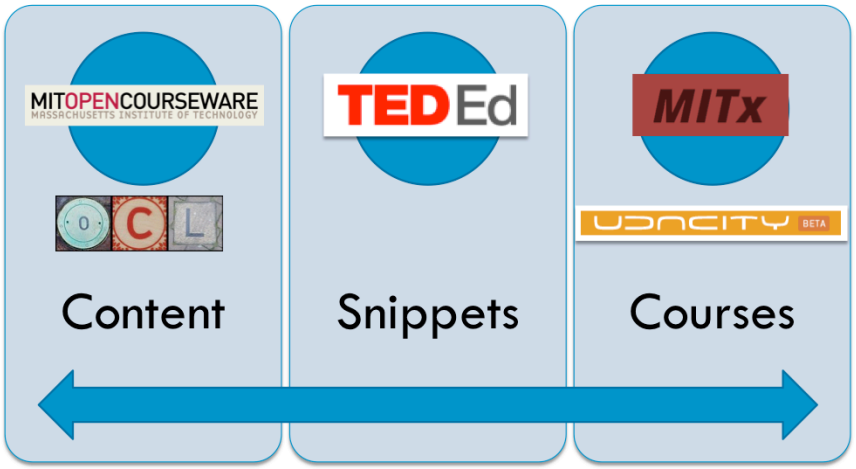
OER Smörgåsbord

- Open as a conversation:
  Sharing, access, materials, practice

- Open as a continuum



Open Moving Forward



OCL Logo Credit: Timothy Valentine & Luis Bernardo CC-BY-NC-SA

Comparing Open Content to Open Courses

40

Content (Materials)	Snippets & Courses+
Syllabi, lecture notes & videos	Complete learning experience
Sample homework and exams	Scored homework and exams
Textbooks	Community / discussion
No grade / certificate	Grade / certificate

Washington's Open Course Library

- A collection of openly licensed (CC-BY) educational materials for 81 high-enrollment college courses

  Project Goals:
  - Lower textbook costs for students
  - Improve course completion rates
  - Provide new resources for faculty
  - Please visit: http://opencourselibrary.org

Credit: Timothy Valentine & Lea Reynolds CC-BY-NC-SA

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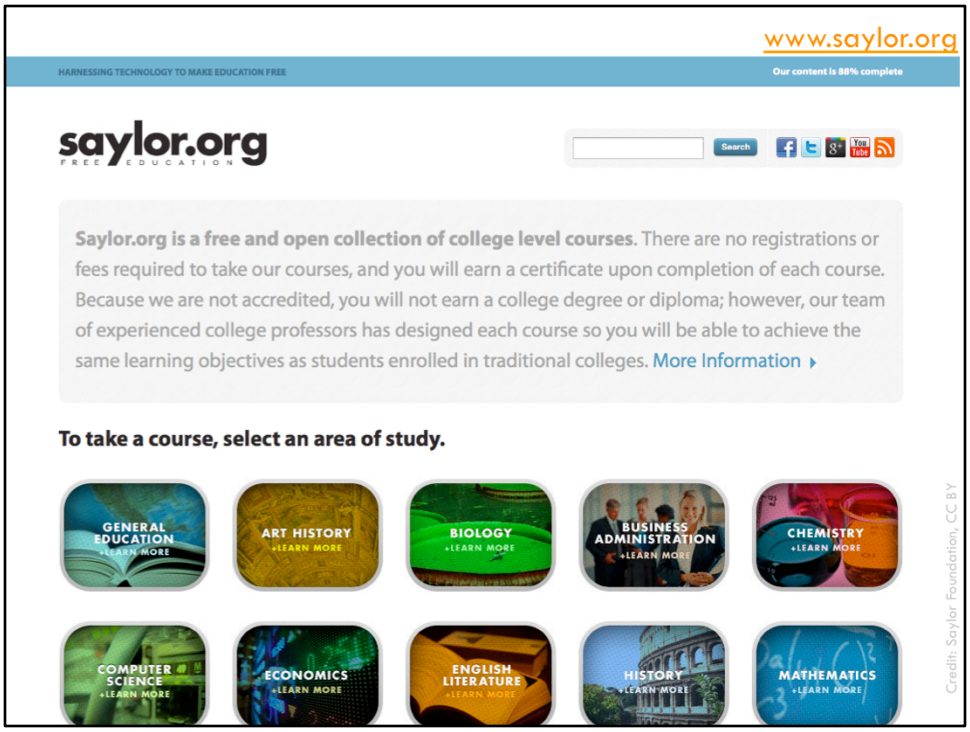
The Open Course Library is a collection of expertly developed educational materials – including textbooks, syllabi, course activities, readings, and assessments – for 81 high-enrollment college courses. 42 courses have been completed so far, providing faculty with a high-quality option that will cost students no more than $30 per course.

Extending Open Content

42

- Open (Creative Commons License) enables others to build upon the content
- Content: A portion of a course, the materials in a course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Precalculus II

Precalculus II continues the in-depth study of functions addressed in Precalculus I by adding the trigonometric functions to your function toolkit. In this course, you will cover families of trigonometric functions, as well as their inverses, properties, graphs, and applications. Additionally, you will study trigonometric equations and identities, the laws of sines and cosines, polar coordinates and graphs, parametric equations and elementary vector operations.

You might be curious how the study of trigonometry, or "trig," as it is more often referred to, came about and why it is important to your studies still. Trigonometry, from the Greek for "triangle measure," studies the relationships between the angles of a triangle and its sides and defines the trigonometric functions used to describe those relationships. Trigonometric functions are particularly useful when describing cyclical phenomena and have applications in numerous fields, including astronomy, navigation, music theory, physics, chemistry, and—perhaps most importantly, to the mathematics student—calculus.

In this course, you will begin by establishing the definitions of the basic trig functions and exploring their properties and then proceed to use the basic definitions of the functions to study the properties of their graphs, including domain and range, and to define the inverses of these functions and establish the properties of these. Through the language of transformation, you will explore the ideas of period and amplitude and learn how these graphical differences relate to algebraic changes in the function formulas. You will also learn to solve equations, prove identities using the trig functions, and study several applications of these functions

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Learning Outcomes

SHOW

Course Overview

EXPAND RESOURCES

Unit 1 | Unit 2 | Unit 3 | Unit 4 | All Units

Unit Outline

SHOW

Unit 1: Trigonometric Functions of Angles

Imagine standing some distance from a building and trying to guess at its height. With some simple measurements and the tools you learn in this unit, you will be able to find the height of the building precisely. This is one of the many application problems you will be able to solve after your study of trigonometry.

In this unit, you will explore the properties of circles and use those properties to investigate angles within the circle. In particular, you will begin with a new definition of angle measure related to arc length in a circle. A review of the equation for a circle with radius r leads to a definition of the sine and cosine functions, and you will use these to define the remaining trigonometric functions and explore their basic properties and identities. These definitions will be used to derive similar definitions for right triangle trigonometry, which is precisely the tool needed to solve problems like the one mentioned above.

Unit 1 Time Advisory show

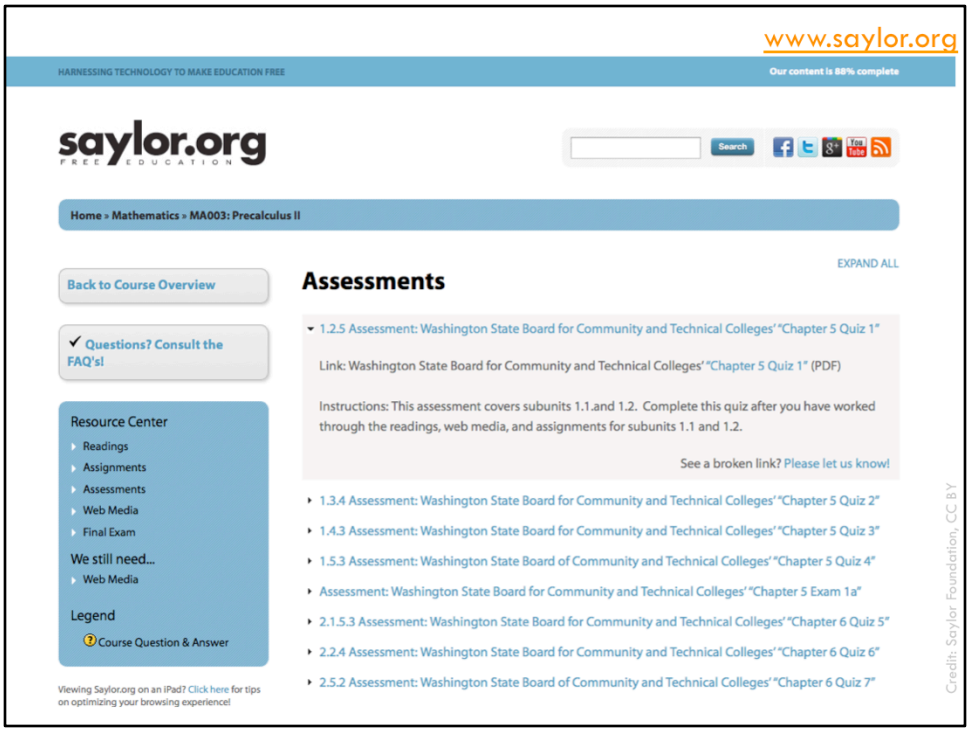
Unit 1 Learning Outcomes show

1.1 Circles

- Reading: Lippman and Rasmussen's Precalculus: An Investigation of Functions: "Chapter 5: Trigonometric Angles of Functions"

1.1.1 The Pythagorean Theorem

Note: This topic is covered in the reading under subunit 1.1. To learn about the Pythagorean Theorem please focus on the material on page 297.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Assessments
1.2.5 Assessment: Washington State Board for Community and Technical Colleges' "Chapter 5 Quiz 1"
Link: Washington State Board for Community and Technical Colleges' "Chapter 5 Quiz 1" (PDF)
Instructions: This assessment covers subunits 1.1.and 1.2. Complete this quiz after you have worked through the readings, web media, and assignments for subunits 1.1 and 1.2.
See a broken link? Please let us know!
1.3.4 Assessment: Washington State Board for Community and Technical Colleges' "Chapter 5 Quiz 2"
1.4.3 Assessment: Washington State Board for Community and Technical Colleges' "Chapter 5 Quiz 3"
1.5.3 Assessment: Washington State Board of Community and Technical Colleges' "Chapter 5 Quiz 4"
Assessment: Washington State Board for Community and Technical Colleges' "Chapter 5 Exam 1a"
2.1.5.3 Assessment: Washington State Board for Community and Technical Colleges' "Chapter 6 Quiz 5"
2.2.4 Assessment: Washington State Board for Community and Technical Colleges' "Chapter 6 Quiz 6"
2.5.2 Assessment: Washington State Board of Community and Technical Colleges' "Chapter 6 Quiz 7"
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MA003: Precalculus II

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MA003 Final Exam

Review of attempt 1

Finish review

Started on	Tuesday, March 27, 2012, 08:00 PM
Completed on	Tuesday, March 27, 2012, 08:02 PM
Time taken	2 mins 8 secs
Marks	1/50
Grade	**0.2** out of a maximum of 10 (**2**%)

1
Marks: 1

If $\sin\theta = \frac{4}{5}$, find (i) $\cos\theta$ and (ii) $tan\theta$.

Choose one answer.

- A. $\cos\theta = -\frac{3}{5}, tan\theta = -\frac{4}{3}$
- B. $\cos\theta = \frac{3}{5}, tan\theta = \frac{4}{3}$
- C. $\cos\theta = -\frac{3}{4}, tan\theta = -\frac{3}{5}$
- D. $\cos\theta = \frac{3}{4}, tan\theta = \frac{3}{5}$

Incorrect

Marks for this submission: 0/1.

2
Marks: 1

Find the reference angle for an angle of measure $\frac{13}{5}\pi$.

Choose one answer.

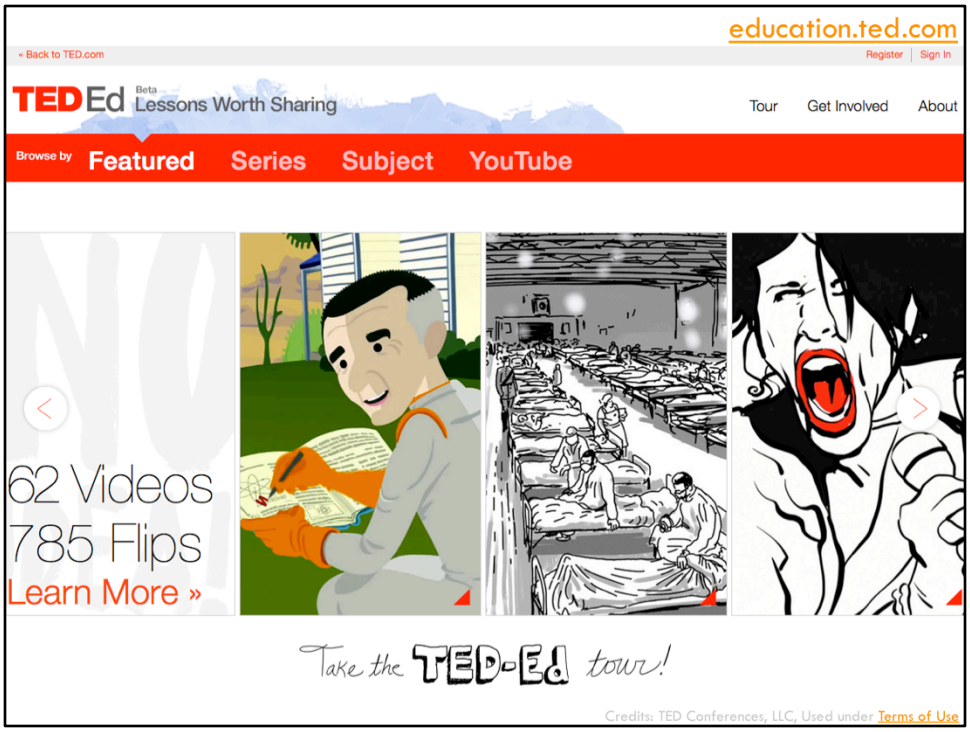
- A. $-\frac{3}{5}\pi$
- B. $\frac{3}{5}\pi$ ✓
- C. $\frac{13}{5}\pi$
- D. $-\frac{13}{5}\pi$

Correct

Non-traditional producers of OER

48

- Have you heard of TED?
- Have you seed TED-Ed?
  http://education.ted.com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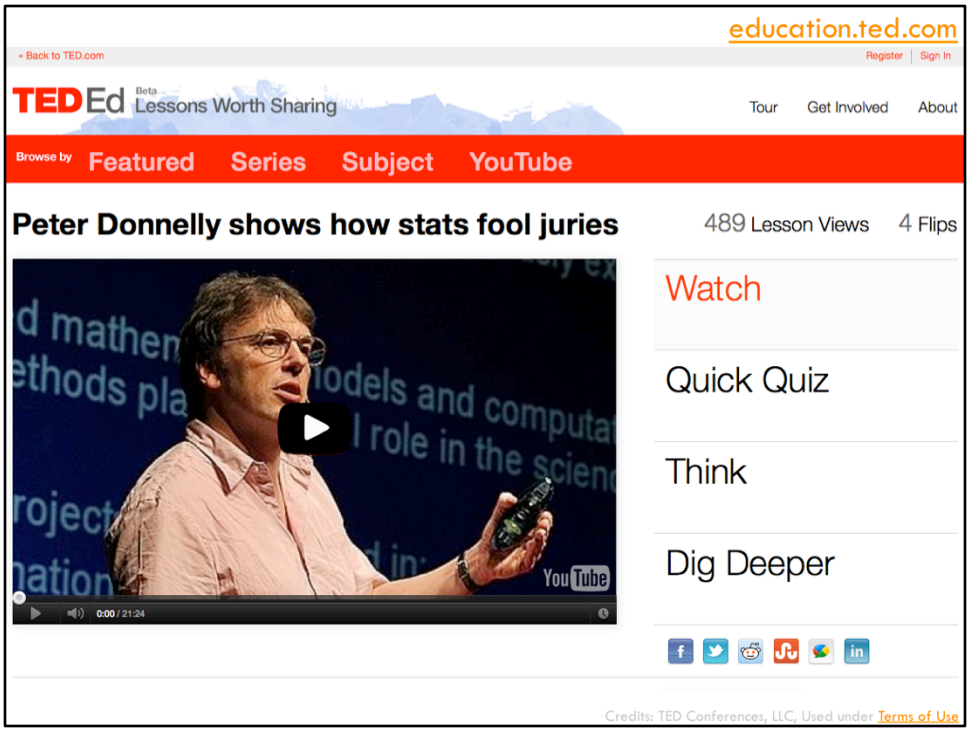
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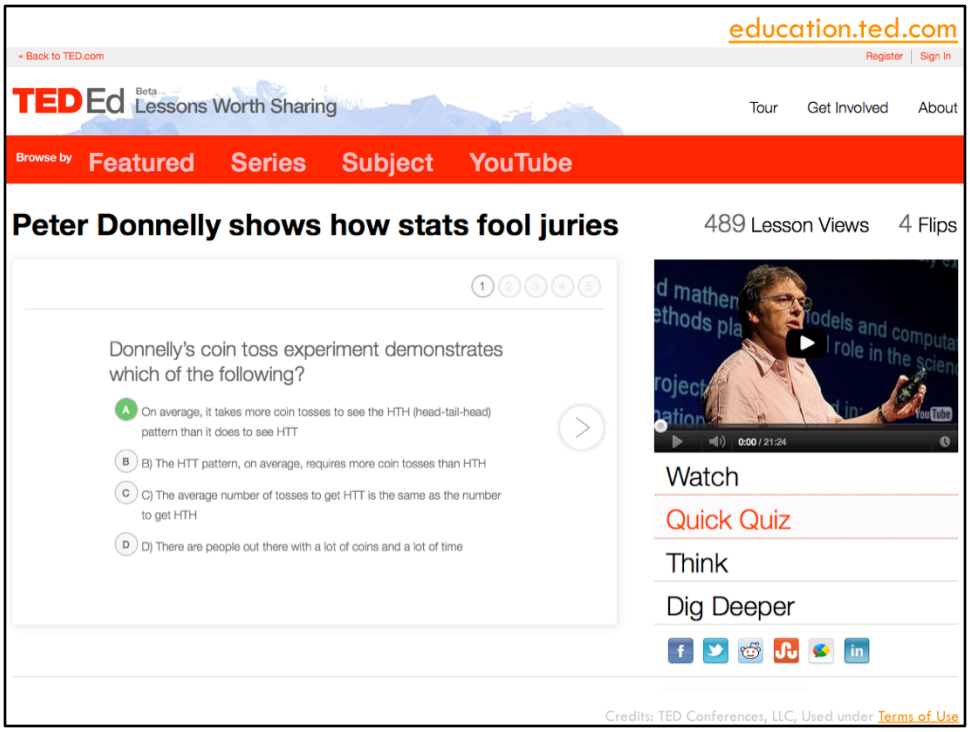
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4 Flips
Donnelly's coin toss experiment demonstrates which of the following?
A On average, it takes more coin tosses to see the HTH (head-tail-head) pattern than it does to see HTT
B B) The HTT pattern, on average, requires more coin tosses than HTH
C C) The average number of tosses to get HTT is the same as the number to get HTH
D D) There are people out there with a lot of coins and a lot of time
0:00 / 21:24
Watch
Quick Quiz
Think
Dig Deeper
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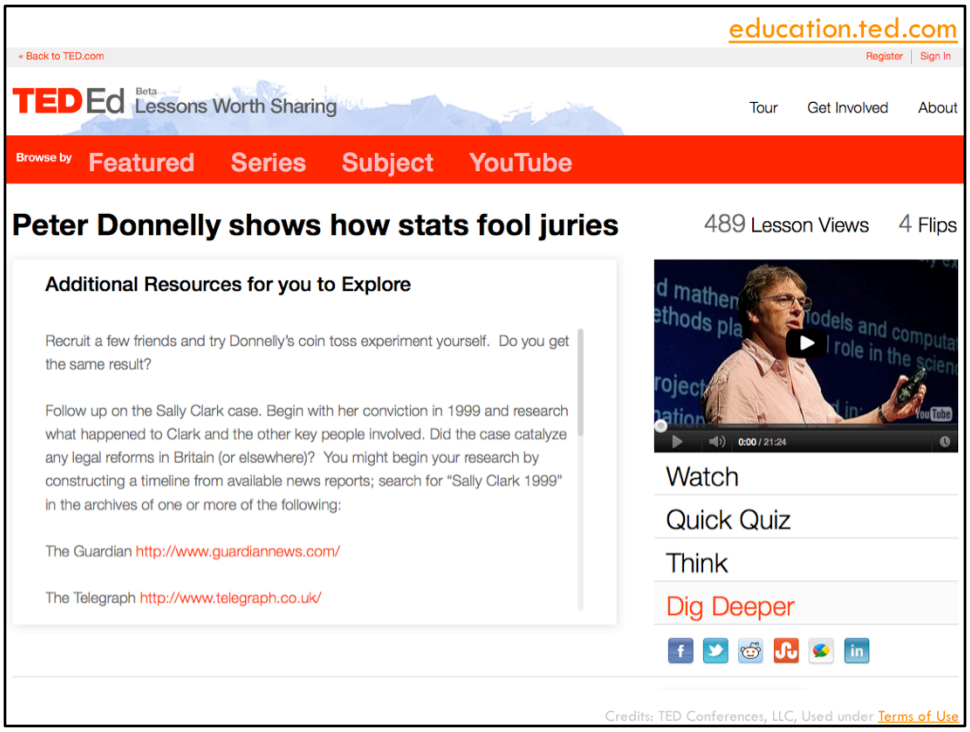
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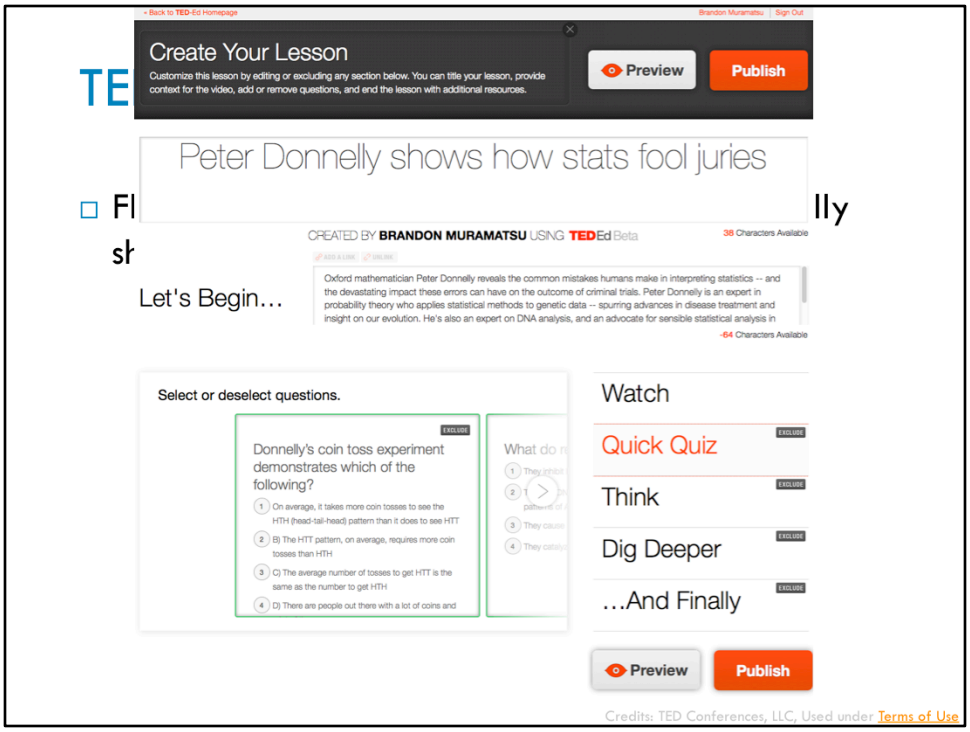
Additional Resources for you to Explore
Recruit a few friends and try Donnelly's coin toss experiment yourself. Do you get the same result?
Follow up on the Sally Clark case. Begin with her conviction in 1999 and research what happened to Clark and the other key people involved. Did the case catalyze any legal reforms in Britain (or elsewhere)? You might begin your research by constructing a timeline from available news reports; search for "Sally Clark 1999" in the archives of one or more of the following:
The Guardian http://www.guardiannews.com/
The Telegraph http://www.telegraph.co.uk/
0:00 / 21:24
Watch
Quick Quiz
Think
Dig Deeper
Credits: TED Conferences, LLC, Used under Terms of Use


Create Your Lesson
Customize this lesson by editing or excluding any section below. You can title your lesson, provide context for the video, add or remove questions, and end the lesson with additional resources.
Preview
Publish
Peter Donnelly shows how stats fool juries
CREATED BY BRANDON MURAMATSU USING TEDEd Beta
Let's Begin…
Select or deselect questions.
Donnelly's coin toss experiment demonstrates which of the following?
Watch
Quick Quiz
Think
Dig Deeper
…And Finally
Preview
Publish
Credits: TED Conferences, LLC, Used under Terms of Use

Comparing Open Content to Open Courses

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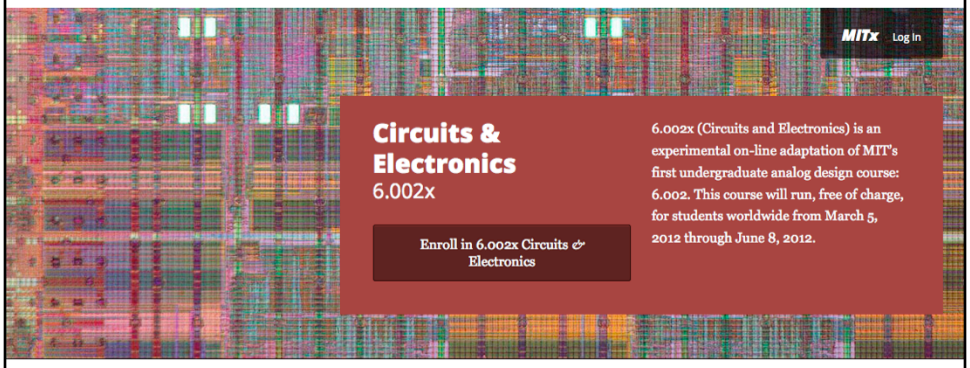
Content (Materials)	Courses+
Syllabi, lecture notes & videos	**Complete learning experience**
Sample homework and exams	**Scored homework and exams**
Textbooks	**Community/discussion**
No grade / certificate	Grade / **certificate**

http://mitx.mit.edu/



About 6.002x

6.002x (Circuits and Electronics) is designed to serve as a first course in an undergraduate electrical engineering (EE), or electrical engineering and computer science (EECS) curriculum. At MIT, 6.002 is in the core of department subjects required for all undergraduates in EECS.

The course introduces engineering in the context of the lumped circuit abstraction.

6.002x on *MITx*

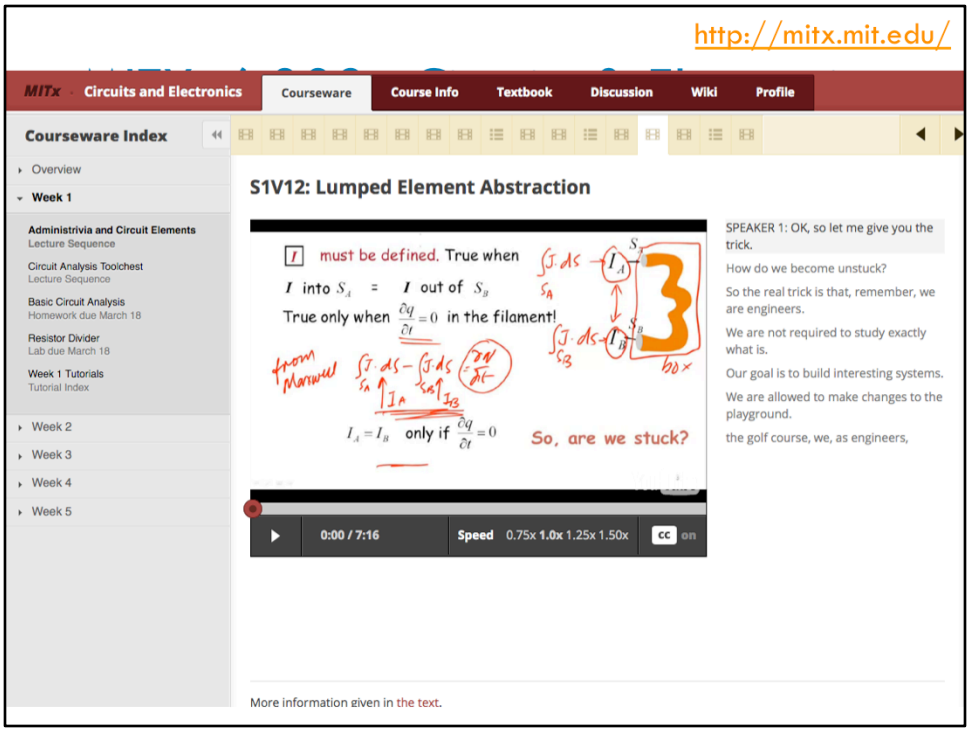
If you successfully complete the course, you will receive an electronic certificate of accomplishment from *MITx*. This certificate will indicate that you earned it from *MITx's* pilot course. In this prototype version, *MITx* will not require that you be tested in a testing center or otherwise have your identity certified in order to receive this certificate.

The course uses the textbook Foundations of

ABOUT THE COURSE STAFF

Anant Agarwal

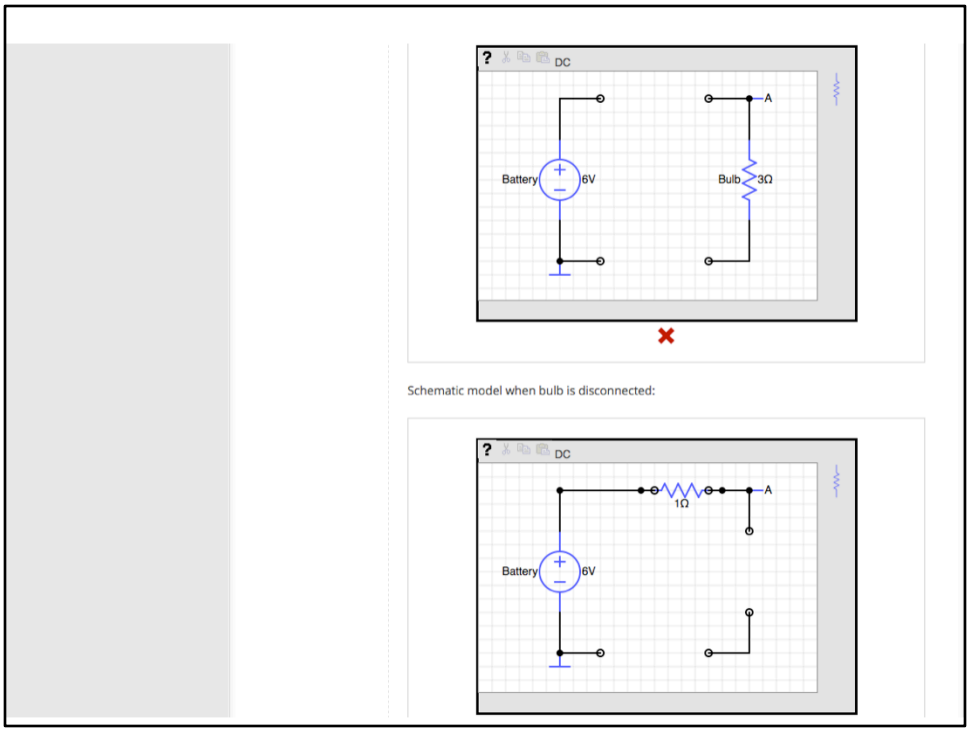
Director of MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) and a professor of the Electrical Engineering and Computer Science department at MIT. His research focus is in parallel computer architectures and cloud software systems, and he is a founder of several



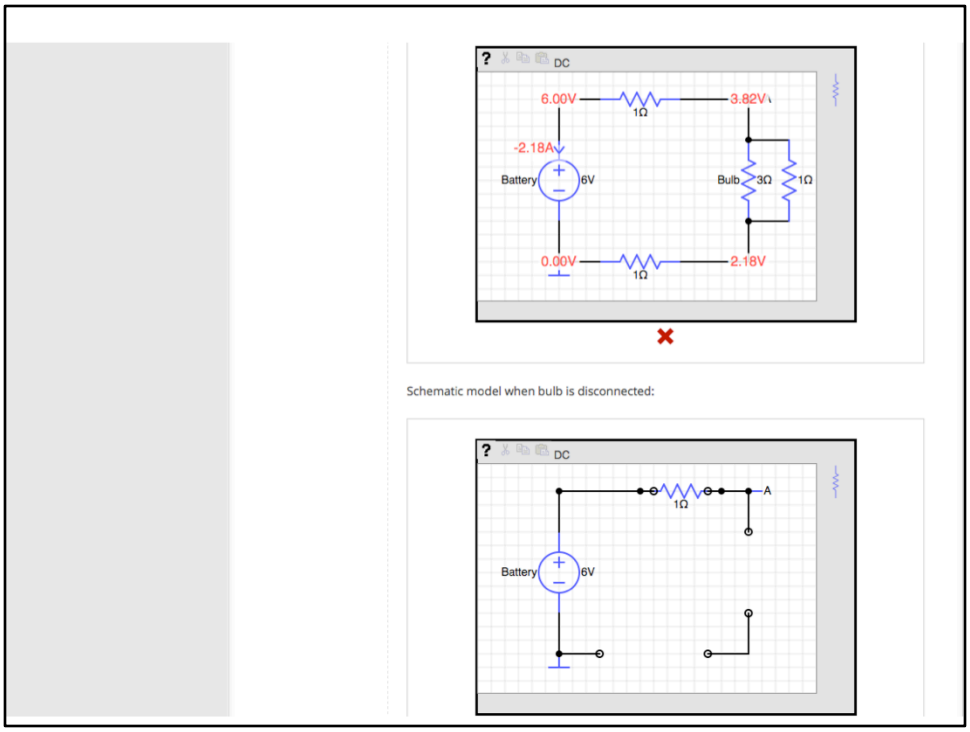
Course tracks the materials I've seen.

Course materials structured/arranged by week, by small chunks. Lets me pick up where I left off.

Video "lecture", speed up/slow down, transcript.



Week 1 Lab
Add resistors apply current and evaluate the circuit.



Week 1 Lab
Add resistors apply current and evaluate the circuit.

Is it innovative? Or is it the right time?

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- Is it a typical online course?
- Video + transcript (not caption)
- Online, self-scored…
  - Homework, customized questions
  - Online labs, customized
- Open to the world
  - Class size 150,000 students (20,000 persisting)
  - Two faculty & 4 TAs
- Certificate upon successful completion

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What does this all mean for you?

What does this all mean for you?

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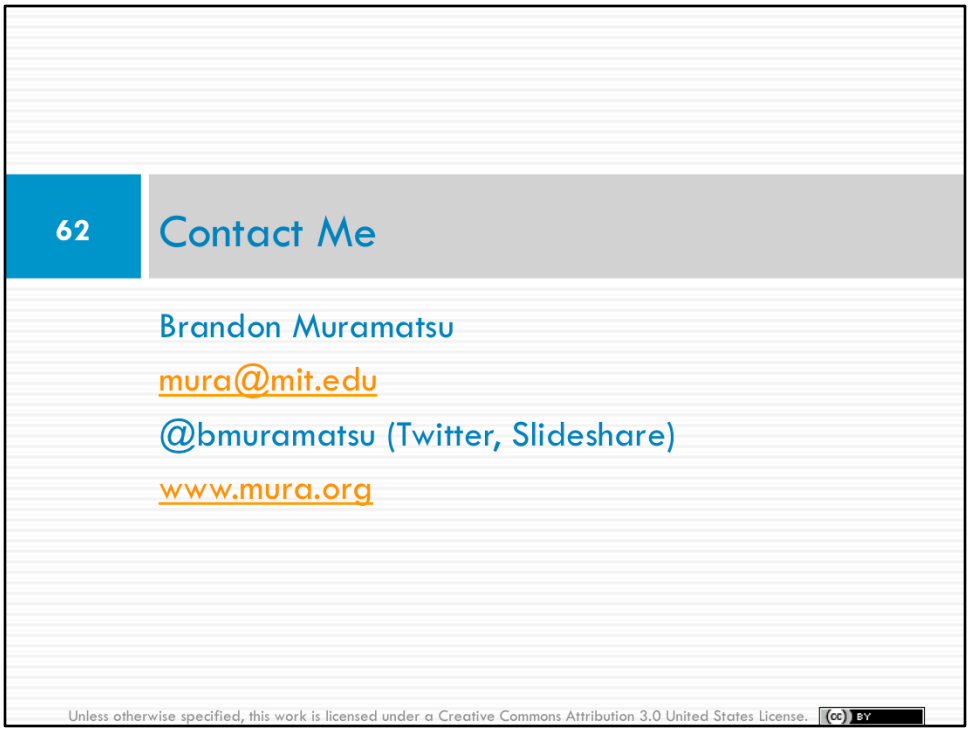
- What are your unique contributions?
- What does a move from content -> courses mean?
- What could you do to build upon / take advantage of the open courses that are being developed?
- What does a modular curriculum look like for you? What does it mean to produce small chunks of material and weave them together?



Citation: Muramatsu, B. (2012, April). OEx. Invited Presentation at Tacoma Community College, April 27, 2012.

This work builds upon these two presentations, both licensed

Muramatsu, B., & Runyon, J. (2012, February). Demystifying open educational resources. Preconference workshop at eLearning 2012, Long Beach, CA.