

What is the Future of Learning?: Visions of Education 20/20 in Our Changing Learning World!

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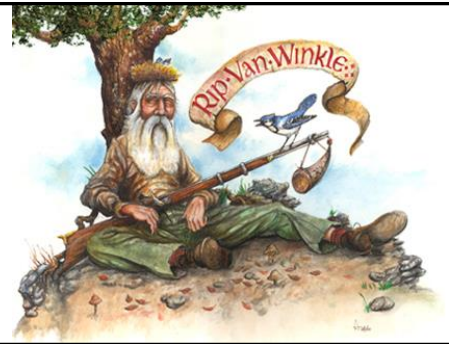


Talk Overview

1. Education 20/20
2. New Roles of the Instructor
3. First and Last Principles of Instruction
4. Artificial Intelligence vs. Intelligence Augmentation
5. Megatrends of Learning: Engagement, Access, and Customization (30 ways that learning is changing...)
6. Future Trends and Ideas



(Circa Confucius 551–479 BCE)



What happens to
sleeping students?



Education 20/20



20 New Roles of the Instructor

Captain Course Ambassador Consumer Advocate
 Counselor Curator Cook Change Catalyst
 Conductor Concierge Comedian
 Consultant Camping Trip Guide Coach
 Course Expedition Leader Collaborator
 Community Organizer Chemist Care Giver
 Cultivator Colleague

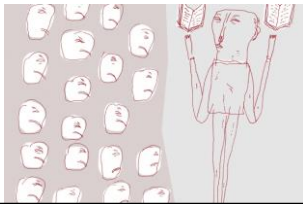
March 26, 2017

Long Live the Lecture!

Miya Tokumitsu

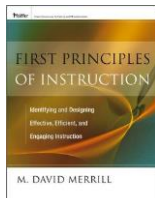
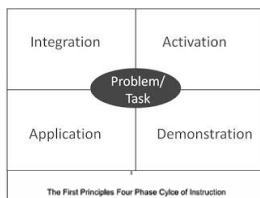
Chronicle of Higher Education

<http://www.chronicle.com/article/The-Cost-That-Holds-Back/239708>



Merrill's First Principles of Teaching/Instruction

<http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



Bonk's 20 "Last" Principles of Instruction (LAST = Learning Activation System Template)

<http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>

Flexibility Support and Feedback Choice and Options
 Convenience Spontaneity Nontraditional Learning
 Collegiality Organization Passion and Inspiration
 Sharing Relevance and Meaningfulness
 Trial and Error (i.e., it is ok to fail)
 Expanded Resources
 Human Connectedness #20 ???
 Cognitive Apprenticeship
 Empowerment and Autonomy



20. ??? (what is missing)

<http://travelinman.blogspot.com/2011/05/borks-last-principles-of-instruction.html>



Clearly... Learning is Changing!



Poll #1: Remember Education 1.0?

1728: 1st correspondence course advertised Boston (learn shorthand from Caleb Phillips thru weekly mailed lessons)

The First University Correspondence Course
(University of London, External Program, 1858)

1728-1990s – Generally postal system based



Fast Forward 200 Years...

MOOC, Meet MORC (Massive Open Radio Course)

WHA, UW Madison, College of the Air, 1933,
Vocational Training dedicated to Agriculture,
and later Home Economics and Typing (On Wisconsin, Fall 2014)



MOOC, Meet MORC



Mimeograph machine.

Poll #2: Fast Forward 50 more Years...

Do you remember education 2.0?



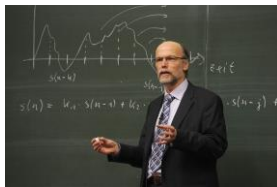
Poll #3: Do you really remember what was to be education 2.0?



Fast Forward 30+ More Years...
"Anyone can now learn anything from anyone at any time."



Education 3.0...Education 20/20



"In Education 3.0, classrooms would move away from lectures, such as this one, to having class time be spent on discussions and projects, using digital technology."
 (Per Wikipedia: https://en.wikipedia.org/wiki/Education_3.0)

Education 3.0 The Genesis and Emergence of Education 3.0 in Higher Education and its Potential for Africa

First Monday, by Derek Keats and J. Philipp Schmidt, March 2007
<http://firstmonday.org/ntc/index.php/fm/article/view/1625/1549>

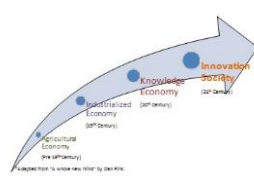
EDUCATION 3.0

Characteristics	Education 1.0	Education 2.0	Education 3.0
Primary role of professor	Source of knowledge	Guide and source of knowledge	Orchestrator of collaborative knowledge creation
Content arrangements	Traditional copyright materials	Copyright and free/open educational resources for students within disciplines, sometimes across institutions	Free/open educational resources created and revised by students across multiple institutions, disciplines, nations, supplemented by original materials created for them
Learning activities	Traditional, essays, assignments, tests, some groupwork within classroom	Traditional assignment approaches transferred to more open technologies; increasing collaboration in learning activities; still largely confined to institutional and classroom boundaries	Open, flexible learning activities that focus on creating room for student creativity; social networking outside traditional boundaries of discipline, institution, nation

Now What is Education 4.0?

"Innovation-producing education. Learn more in: Development of Individual Agency within a Collaborative, Creative Learning Community"

<http://www.igi-global.com/dictionary/education-40/41755>
<https://thinc.in.th/engadmission/education4.html> (Chula Engineering)



January 14, 2016

The Fourth Industrial Revolution: What it means, how to respond

Klaus Schwab, Founder and Executive Chairman, World Economic Forum
<https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
 (Ubiquitous, mobile supercomputing, artificially intelligent robots, self-driving cars, nanotechnology, digital brain enhancements, genetic editing, etc.)
<http://www.trainingshare.com/fourth-industrial-revolution-what-it-means-and-how-to-respond>



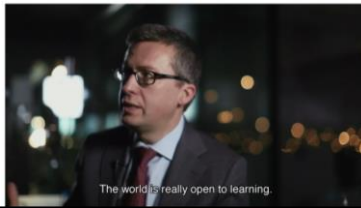
Navigating the next industrial revolution

Revolution	Year	Information
1	1784	Steam, water, mechanical production equipment
2	1870	Division of labour, electricity, mass production
3	1969	Electronics, IT, automated production
4	?	Cyber-physical systems



April 13, 2016**The Fourth Industrial Revolution:****What it means, how to respond**

Klaus Schwab, Founder and Executive Chairman, World Economic Forum

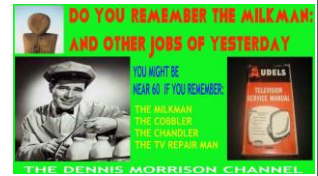
<https://www.weforum.org/agenda/2016/04/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
<http://trainingshare.com/fourth-industrial-revolution-video-clip.php>
<http://www.tube8oo.com/watch/8280981>
**April 30, 2017****'Those Jobs Are Gone',**

Steve Kolowich, The Chronicle of Higher Education

<http://www.chronicle.com/article/Whos-UpWith-a-Revolution/239964>
'Those Jobs Are Gone'

By Steve Kolowich | April 30, 2017 | 4 minutes

A recent *Chronicle* article by the late, great David Colquhoun, a former editor of *The New York Times*, argues that the loss of jobs to automation is not a new phenomenon. It is, in fact, a recurring theme in the history of the industrial revolution. The article is a must-read for anyone who is interested in the future of work.

**August 21, 2016**
ST Future Economy Roundtable:
Is Asia ready for the Fourth Industrial Revolution?
 The Straits Times

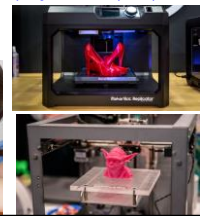
<http://www.stratimes.com/asia/is-asia-ready-for-the-fourth-industrial-revolution>


"It's quite clear that the established models of education have to change and adapt to the new environment."

August 17, 2016
Research: 3D Printing Market to Double by 2020
 Joshua Bolkan, Campus Technology

<https://campustechnology.com/articles/2016/08/17/research-3d-printing-market-to-double-by-2020.aspx>
Research: 3D Printing Market to Double by 2020

By Joshua Bolkan | 8/17/16

**June 7, 2016**
Teaching refugees how to code
 CNN Money

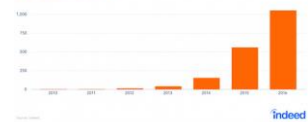
<http://money.cnn.com/video/technology/2016/06/07/recorded-flatiron-refugees-code.cnnmoney/index.html>
**May 3, 2017**
4 out of 5 Companies Have Hired a Coding Bootcamp Graduate
 Sri Ravipti, Campus Technology

<https://campustechnology.com/articles/2017/05/03/4-out-of-5-companies-have-hired-a-coding-bootcamp-graduate.aspx>

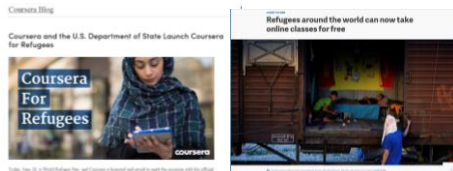

Indeed

Resumes with "coding bootcamp" education experience

Per 1,000,000 resumes on Indeed



Indeed

June 20, 2016**Coursera on a Mission to Help Refugees**Lauren Camera, US News and World Report
<http://www.usnews.com/news/articles/2016-06-20/coursera-on-a-mission-to-help-refugees>**February 9, 2017****More black and Latino students learn to code as Code.org classes swell**

Jessica Guynn, USA Today

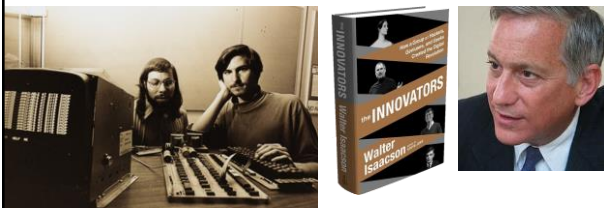
<http://www.usatoday.com/story/tech/news/2017/02/09/codeorg-reaches-black-latino-students/9787153/>**September 21, 2016****Udacity Unveils Nanodegree Program for Self-Driving Car Engineers**

Sri Ravipati, Campus Technology

<https://campustechnology.com/articles/2016/09/21/udacity-unveils-nanodegree-program-for-self-driving-car-engineers.aspx>**Poll #4:****Read any good books lately detailing this shift?****The Innovators:**

How a group of hackers, geniuses, and geeks created the digital revolution. New York: Simon & Schuster.

Walter Isaacson (2014)

<http://books.simonandschuster.com/The-Innovators/Walter-Isaacson/9781475708600>**Machines of Loving Grace:**

The Quest for Common Ground Between Humans and Robots. HarperCollins.

John Markoff (2015)

<http://www.amazon.com/Machines-Loving-Grace-Common-Ground/dp/0062266883>

Artificial Intelligence John McCarthy, Stanford AI Lab

<http://www.amazon.com/Machines-Loving-Grace-Common-Between/dp/0062266483>

John
McCarthy

- 1955: Develop the phrase "Artificial Intelligence"
- 1959: Programs with Common Sense
- 1960: First LISP implementation
- 1971: Turing Award Recipient



Intelligence Augmentation and Amplification Douglas Engelbart's "The Mother of All Inventions" (1968) Augmentation Research Center (ARC)

(The live demonstration featured the introduction of the computer mouse, video conferencing, teleconferencing, hypertext, word processing, hypermedia, object addressing and dynamic file linking, bootstrapping, and a collaborative real-time editor.)

<http://www.amazon.com/Machines-Loving-Grace-Common-Between/dp/0062266483>



Engelbart's prototype of a computer mouse, as designed by Bill English from Engelbart's sketches.



Knowledge Navigator (1987) Apple Computer

<http://www.youtube.com/watch?v=h4A4F6vEc>



August 6, 2016

The Web is 25!

Happy (sort of) birthday, World Wide Web!,
Erica Fink and Jonathan Tortora, CNN Money (Tech)

<http://info.cern.ch/> (First website)

<http://info.cern.ch/hypertext/WWW/TheProject.html>

<http://money.cnn.com/2016/08/06/technology/world-wide-web-25-years-old/index.html?hpid=hp-stack-dom>



THE WORLD WIDE WEB
BEGINS ON MARCH 12, 1989

January 15, 2016

Wikipedia is 15!

Scott McLemee, Inside Higher Ed

<http://www.insidehighered.com/digital-learning/article/2016/01/15/wikipedia-15>



Wikipedia at 15

Celebrate or hate it as you will, writes Scott McLemee, Wikipedia has metamorphosed from its beginnings as a gangly cultural interloper into the de facto reference work of first resort.

January 15, 2016

by Scott McLemee

Wikipedia came into the world 15 years ago today – and, man, what an ugly baby. The first snapshot of it in the Internet Archive is from late March of 2001, when Wikipedia was already 10 weeks old. At that point, it claimed to have more than 5,000 pages, with an expressed hope of reaching

April 4, 2016

MIT OpenCourseWare is 15!

<http://ocw.mit.edu/about/15-years/>




MIT OpenCourseWare celebrates 15 years of open sharing

About OpenCourseWare

MIT OpenCourseWare is a free and open publication of material from thousands of MIT courses, covering the entire MIT curriculum. And, thanks to the generosity of donors and educators around the world,


The World is Open: How Web Technology Is Revolutionizing Education



世界是开放的
网络技术如何变革教育
The World Is Open
How Web Technology Is Revolutionizing Education
Curtis J. Bone

TEN OPENERS: (WE-ALL-LEARN)

1. Web Searching in the World of E-Books
2. E-Learning and Blended Learning
3. Availability of Open Source and Free Software
4. Leveraged Resources and OpenCourseWare
5. Learning Object Repositories and Portals
6. Learner Participation in Open Information Communities
7. Electronic Collaboration
8. Alternate Reality Learning
9. Real-Time Mobility and Portability
10. Networks of Personalized Learning



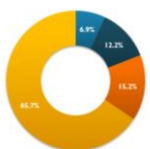
The World is Open
How Web Technology Is Revolutionizing Education
Curtis J. Bone



July 2016 The Awareness Problem: Opening the Textbook: Educational Resources in U.S. Higher Education, 2015-2016

I. Elaine Allen and Jeff Seaman, Babson Survey Research Group
<http://www.onlinelearningsurvey.com/reports/openingthetextbook2016.pdf>

AWARENESS OF OPEN TEXTBOOKS: 2015-16




● Very aware
● Somewhat aware
● Not aware
● Don't know


OER Use to Triple Over Next 5 Years

Open educational resources (OER) are making serious inroads in higher education, with the potential to triple in use over the next five years. Based on a survey of 12,000 higher education faculty, the report of OER use and adoption is expected to triple in use in the next five years.


These findings and more were published in a new report from **College Learning Alliance** ("Open Educational Resources and the Future of Higher Education: A Report for the Education Community") available at www.collegelearningalliance.org.




The Evolution of E-Learning (All 7 year cycles)




Phase I, 1994:
THE AGE OF
PORTALS AND
PAGES (NETSCAPE
GOES PUBLIC).



Phase II, 2001:
THE AGE OF
OPENNESS
(MIT OCW &
WIKIPEDIA BORN).



Phase III, 2008:
THE AGE OF
MOOCS (FIRST
MOOC OFFERED).





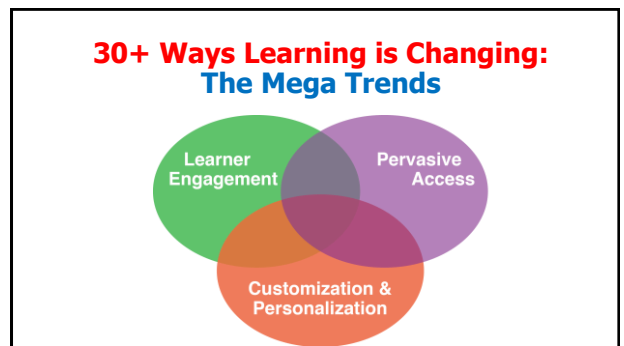
Phase IV, 2015
THE AGE OF
PERSONALIZATION.

Other prior significant e-learning dates: 1985: FIRST ONLINE COURSE, LINDA HARASIM, UNIV. OF TORONTO
1987: HYPERCARD FIRST SHIPPED.

Thirty Ways Learning is Changing...

(i.e., it's more informal, video-based,
ubiquitous, collaborative, self-directed,
global, mobile, open, massive, etc.)



How Learning is Changing: Mega Trend #1. Learner Engagement



Learning is More Social



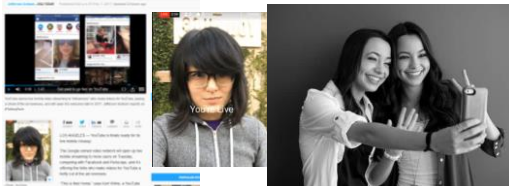
February 7, 2017 (Engagement)

Learning is More Social

YouTube takes on Facebook with mobile live
Jefferson Graham, USA Today

<http://www.usatoday.com/story/tech/2017/02/07/youtube-takes-facebook-mobile-live/97566592/>

YouTube takes on Facebook with mobile live



February 27, 2017 (Engagement)

Learning is More Immersive

Augmented and Virtual Reality Spending to Double in 2017, Sri Ravipati, THE Journal

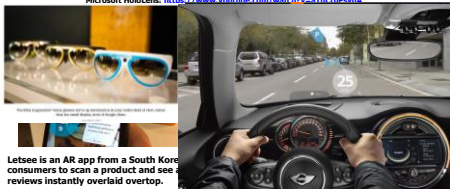
<https://thejournal.com/article/2017/02/27/augmented-and-virtual-reality-spending-to-double-in-2017.aspx>
Worldwide, forecasts the AR/VR market to reach \$13.9 billion in 2017 — up 130.5 percent from the \$6.1 billion spent in 2016. Furthermore, AR/VR spending is expected to accelerate over the next several years, achieving a compound annual growth rate (CAGR) of 196 percent over the 2015-2020 forecast period and reaching \$14.7 billion in 2020.



June 10, 2015 (Engagement)
Learning is More Immersive

Augmented reality promises 'superpowers', and people are listening
The USA Today, Marco della Cava

<http://www.usatoday.com/story/tech/2015/06/10/2d-news-abstract-and-the-20th-at-cinema/29572861/>
<http://www.gizmag.com/2015/06/10/2d-news-abstract-and-the-20th-at-cinema/29572861/>
Microsoft HoloLens: <http://www.youtube.com/watch?v=atDcH8w0>



Letsee is an AR app from a South Korea consumers to scan a product and see reviews instantly overlaid on top.

May 7, 2015 (Engagement)
Learning is More Adventurous

Aaron Doering, Chasing Seals, TEDx

<http://chasingseals.com/>
<https://twitter.com/chasingseals>



July 22, 2016 (Engagement)

Learning is More Game-like

**When Pokémon Goes to Campus:
The Good, the Bad, and the Ugly**

Gabriel Sandoval, Chronicle of Higher Education
<http://www.chronicle.com/article/Pokemon-Go-At-College/235000>



Pokémon Go players converged last week on the U. of Nebraska at Lincoln's Memorial Stadium, which officials had opened to the animated-monster hunters. The hit augmented-reality game has prompted many colleges to jump on the bandwagon.

August 23, 2016 (Engagement)

Learning is More Collaborative

**e.g., reef videoconferencing
(Great Barrier Reef, Australia)**

<http://www.reefhq.com.au/education-at-reef-hq-aquarium/reef-videoconferencing>



February 15, 2017 (Engagement)

Learning is More Synchronous

Shindig, Future Trends Forum, Bryan Alexander

<https://bryanalexander.org/the-future-trends-forum/>

<http://www.shindig.com/>

<http://events.shindig.com/event/rf-anniversary>



February 17, 2016 (Engagement)

Learning is More Mobile

World's Cheapest Smartphone at \$3.67

https://m.facebook.com/hacklog/launched?refid=525..._fb...%26

https://m.facebook.com/story.php?story_fbid=1615376001211579&id=192827336797

<http://gadgets.ndtv.com/videos/freedom-251-launches-as-world-s-cheapest-smartphone-at-rs-251-40498>



Samsung is hoping to have 10,000 apps by the time the Gear S3 launches this fall.

Want "FREE" engagement?

How about

"Adding Some TEC-VARIETY"?

<http://tec-variety.com/>



What motivates?

1. Tone/Climate: Psychological Safety, Comfort, Sense of Belonging
2. Encouragement: Feedback, Responsiveness, Praise, Supports
3. Curiosity: Surprise, Intrigue, Unknowns
4. Variety: Novelty, Fun, Fantasy
5. Autonomy: Choice, Control, Flexibility, Opportunities
6. Relevance: Meaningful, Authentic, Interesting
7. Interactivity: Collaborative, Team-Based, Community
8. Engagement: Effort, Involvement, Investment
9. Tension: Challenge, Dissonance, Controversy
10. Yielding Products: Goal Driven, Purposeful Vision, Ownership



**How Learning is Changing:
Mega Trend #2. Pervasive Access**



Learning is More Online (Access) June 15, 2014

Starbucks offers workers 2 years of free college, CNN Money, Gregory Wallace (from Arizona State online programs)

http://money.com/2014/06/15/news/economy/starbucks-scholarship-education/index.html?hpid=hp_12
<http://www.prime.com/2014/06/26/starbucks-to-provide-free-college-education-to-thousands-of-workers.html>



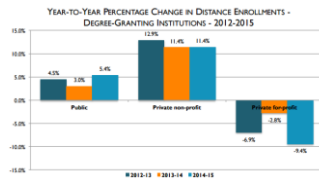
November 22, 2016 (Access)

Indiana University, Online Course Enrollments
<https://cbi.biu.edu/>



May 2, 2017 (Access) 'Volatile' but Growing Online Ed Market, Carl Straumsheim, Inside Higher Ed

<https://www.insidehighered.com/news/2017/05/02/distant-education-education-education-market>



April 27, 2017

Purdue Buys For-Profit Kaplan University for \$1 to Create New Kind of Public University, Jeffrey R. Young, EdSurge

<https://www.edsurge.com/news/2017-04-27/purdue-buys-for-profit-kaplan-university-for-1-to-create-new-kind-of-public-university>



July 21, 2016 (Access) Learning is More Ubiquitous Facebook's Aquila drone completes first test flight, Jessica Guynn, USA Today

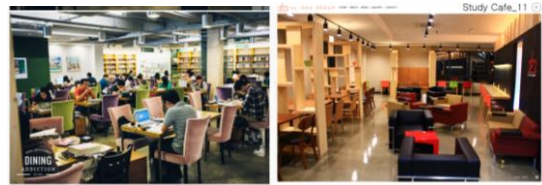
<http://www.usatoday.com/story/tech/news/2016/07/21/facebook-aquila-completes-first-test-flight/3788810/>



An aerial view of Aquila, a autonomous aircraft Facebook is designing to deliver mobile broadband networks to isolated people (mission to fly 60,000 above Earth for up to 3 months at a time; current record for solar-powered unmanned flight is 2 weeks). (Photo: Facebook)

August 1, 2016 (Access) Learning is More Ubiquitous 363 by Idea Group; Study Café Meeting Place; Idea Space (Seoul, Korea)

http://363.co.kr/wp/?page_id=344
http://363.co.kr/wp/?view_gallery=study-cafe_11



May 7, 2014 (Access)

Learning is More Global

CNA - Speaking Exchange (video chats)

FCB Brazil and the CNA language school network are launching the Speaking Exchange project, which connects CNA students in Brazil with Americans living in retirement homes.



February 22, 2017 (Access)

Learning is More Informal

Digital citizenship lessons from a 9-year-old with 18,000 Twitter followers, Alan November, eSchool News

<http://www.eschoolnews.com/2017/02/22/av-digital-citizenship-twitter/>
<http://www.eschoolnews.com/2017/02/22/av-digital-citizenship-twitter/>
<http://www.eschoolnews.com/2017/02/22/av-digital-citizenship-twitter/>
<https://twitter.com/thelittlekingdom>
<https://www.youtube.com/watch?v=8XjwU7e8uc>



August 5, 2015 (Access)

Learning is More Informal

Shubham Jaglan (10 years old) Overwhelmed by "Dream" Return Home After Double World Championship
Disha Chopra, NDTV Sports

<http://sports.ndtv.com/golf/news/246551-shubham-jaglan-overwhelmed-by-dream-return-home-after-double-world-championship>
<http://www.ndtv.com/sports/shubham-jaglan-overwhelmed-by-dream-return-home-after-double-world-championship-246551>



June 13, 2016 (Access)

Learning is More Free and Open

Nine-Year-Old Anvitha Vijay is the Youngest Developer at WWDC (age 9)
(Apple Worldwide Developers Conference), Gadgets

<http://www.9news.com.au/technology/youngest-app-developer-at-apple-wwdc-2016-20160613>



May 4, 2016 (Access)

Learning is More Free and Open
This Mongolian Teenager Aced a MOOC

(140,000 people take the MIT MOOC on Circuits and Electronics, 1 of 300 to get a perfect score)
The Chronicle of Higher Education, Jeffrey R. Young
<http://chronicle.com/article/This-Mongolian-Teenager-Aced-a-MOOC-New/236362>

THE CHRONICLE OF HIGHER EDUCATION

This Mongolian Teenager Aced a MOOC. Now He Wants to Widen Their Impact.

By Jeffrey R. Young | 4/10/16, 2016



This is the latest episode of our new podcast series on the future of higher education. You can subscribe to iTunes to get price and format options.

May 19, 2016 (Access)

Learning is More Free and Open

From MOOC to bootcamp to MIT
MIT News, Office of Digital Learning
(Jin Wu—from MITx to MIT Global Entrepreneurship Bootcamp to master's student)
<http://news.mit.edu/2016/mooc-bootcamp-mit-0519>



September 28, 2016 (Access)
Learning is More Free and Open
Bookshare, An accessibility online
library for people with disabilities
<https://www.bookshare.org/>



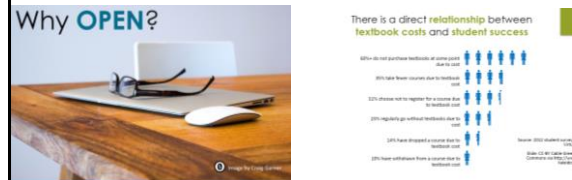
April 6, 2017 (Access)
Learning is More Free and Open
Indiana University's eText program saves students over
\$3.5 million (Program makes digital textbooks cost less
and do more, grows 56 percent),
Indiana University Newsroom
<https://news.iu.edu/articles/2017/indiana-university-etext-program-saves-students-over-3.5-million.php>



March 27, 2017 (Access)
Learning is More Free and Open
Beyond Free: Harnessing the resonant value in open
and collaborative practices for the public good
David Porter, CEO, eCampus Ontario,
Open Education Ontario Summit
<https://www.ocis.ca/events/open-education-ontario-summit>

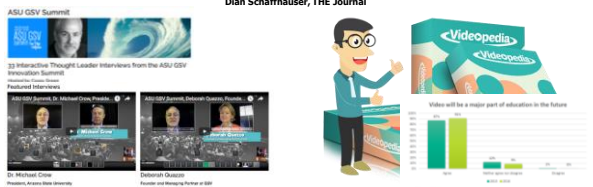


March 27, 2017 (Access)
Learning is More Free and Open
Beyond Free: Harnessing the resonant value in open
and collaborative practices for the public good
David Porter, CEO, eCampus Ontario,
Open Education Ontario Summit
<https://www.ocis.ca/events/open-education-ontario-summit>

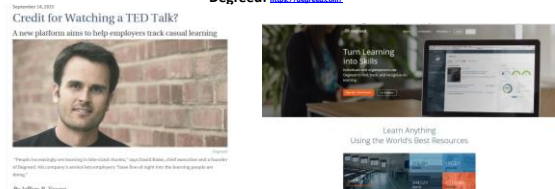


May 4, 2016 (Access)
Learning is More Video-Based
What I Learned at the ASU GSV Summit
Kenneth Green, Inside Higher Ed
<https://www.insidehighered.com/digital-learning/article/2016/05/04/what-i-learned-at-the-asu-gsv-summit>

July 18, 2016 (Access)
Survey: Video Usage in Ed Continues Ramp-up,
Dian Schaffhauser, THE Journal



September 14, 2015 (Access)
Learning is More Video-Based
Credit for Watching a TED Talk? A new platform
aims to help employers track casual learning
Chronicle of Higher Education, Jeffrey R. Young
<http://chronicle.com/article/Credit-for-Watching-a-TED-Talk/230171>
Degreed: <https://degreed.com/>



May 14, 2016 (Access)

Learning is More Immediate...

Mastodon bones offer clues of earliest humans in North America, Faith Karimi, CNN

Abstract: <http://advances.sciencemag.org/content/2/5/e1600375>
Full Article: <http://advances.sciencemag.org/content/2/5/e1600375.full>
Supplemental materials (PDF): <http://advances.sciencemag.org/content/suppl/2016/05/10/2.5.e1600375.DC1>
PDF: http://advances.sciencemag.org/content/suppl/2016/05/10/2.5.e1600375.DC1/1600375_S4.pdf

Mastodon bones offer clues of earliest humans in North America



May 9, 2017 (Access)

Learning is More Immediate...

Meet Zuul, the new dinosaur species named after 'Ghostbusters' demon

Traci Watson, USA Today

<https://www.usatoday.com/story/news/2017/05/09/new-dinosaur-ghostbusters/101475468/>

15 second: <http://curtbonk.com/ghostbusters15.html>
27 second: <http://curtbonk.com/ghostbusters27.html>

Meet Zuul, the new dinosaur species named after 'Ghostbusters' demon

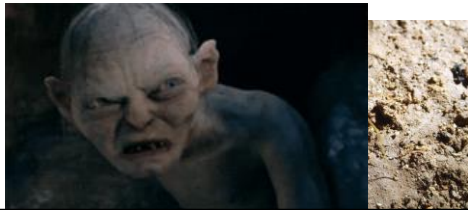


November 19, 2015 (Access)

Learning is More Immediate...

New daddy longlegs named after 'Lord of the Rings' character Smeagol, Mary Bowerman, USA Today

<http://www.usatoday.com/story/tech/2015/11/19/new-daddy-longlegs-named-after-lord-of-the-rings-character-smeagol/786321862/>

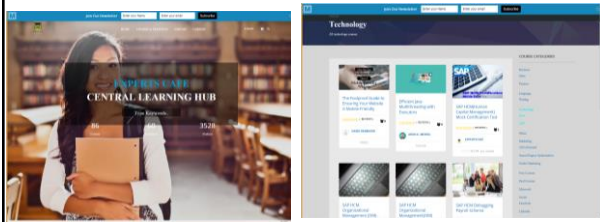


Learning is More Direct from Experts

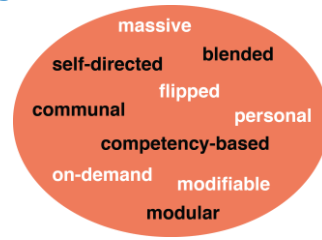


June 20, 2016 (Access)
Learning is More Direct from Experts
(e.g., The Expert Café)

<http://expertscafe.com/>



How Learning is Changing:
Mega Trend #3. Customization



September 7, 2016 (Customization) Learning is More Modifiable

The Future of Collaboration Spaces Encompasses Video
Interactive, Mobil, Julie Johnston, IU, Campus Technology
<https://campustechnology.com/article.aspx/2016/09/07/the-future-of-collaboration-spaces-encompasses-video-interactive-mobil>



In the Indiana University Media School lobby, a large display will showcase student work and provide interactive sessions. (photo by Allen Major/The Media School @ Indiana University)

April 10, 2017 (Customization) Learning is More Modifiable

Miami's big schools makeover: Out with rows of desks, in with open space, digital tech, Kyra Gurney, Miami Herald
<http://www.miamiherald.com/news/local/education/article143434384.html>



The Miami Herald is a member of the News & Media Group, which is a part of the News & Media Group. The Miami Herald is a member of the News & Media Group, which is a part of the News & Media Group.

October 14, 2011 Learning is On Demand Siri (co-founder Tom Gruber)

<http://www.imore.com/siri>



May 9, 2016 Personal Digital Assistants (PDA) Personal digital assistants are on the rise (and they want to talk) USA Today, Edward Baig (i.e., Google codename of "Chirp"), Elizabeth Weise, USA Today <http://www.usatoday.com/story/tech/2016/05/09/google-codename-chirp-ai-assistant/8322351/> <http://www.usatoday.com/story/tech/2016/05/09/google-codename-chirp-ai-assistant/8322351/>



March 24, 2017 (Customization) Learning is On Demand

Hey, Alexa: Siri's not so bad after all!

Jefferson Graham, USA Today
<http://www.usatoday.com/story/tech/2017/03/24/hey-alexa-siri-not-so-bad-after-all/109515324/>
Samsung promises its Galaxy S8 Bixby assistant will be 'fundamentally different'
Edward Baig, USA Today, March 20, 2017
<https://www.usatoday.com/story/tech/2017/03/20/samsung-promises-the-galaxy-s8-bixby-assistant-will-be-fundamentally-different/108888601/>

Hey, Alexa: Siri's not so bad after all!



May 2, 2017 (Customization) Learning is On Demand

Someday, Amazon wants you to have long talks with Alexa

Jefferson Graham, USA Today
<http://www.usatoday.com/story/tech/2017/05/02/amazon-wants-you-to-have-long-talks-with-alexa/108888601/>



May 9, 2017 (Customization)

Amazon Echo Show brings chatty Alexa to a two-way, video touchscreen

Edward C. Baig and Elizabeth Weise, USA Today

<https://www.usatoday.com/story/tech/2017/05/09/amazon-echo-show-two-way-video-touchscreen-alexa/101448894/>

24 seconds: <http://curtbonk.com/jetsons24.html>
44 seconds: <http://curtbonk.com/jetsons44.html>

Amazon Echo Show brings chatty Alexa to a two-way, video touchscreen



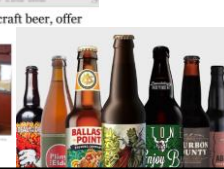
January 20, 2016 (Customization)

Learning is More Blended

Universities tap growth of craft beer, offer classes, Chicago Tribune

<http://www.chicagotribune.com/business/ct-college-craft-beer-offer-classes-20160120-story.html>

Universities tap growth of craft beer, offer classes



January 20, 2016

Universities tap growth of craft beer, offer classes, Chicago Tribune

<http://www.chicagotribune.com/business/ct-college-craft-beer-offer-classes-20160120-story.html>

Portland State University in Oregon started an online Business of Craft Brewing program in 2013. It has become one of the school's most successful professional certificate programs, drawing people from around the world, said Scott Gallagher, the university's director of communications.



January 20, 2016

Universities tap growth of craft beer, offer classes, Chicago Tribune

<http://www.chicagotribune.com/business/ct-college-craft-beer-offer-classes-20160120-story.html>

"We discovered that there's a huge need for people who wanted to get a certificate," Gallagher said. "They didn't necessarily want to go to college or already had a college degree and wanted to open up a brew pub."



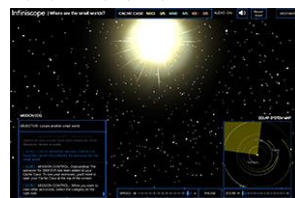
March 23, 2017 (Customization)

Learning is More Personal

Arizona State U Launches Open, Adaptive Lessons on Space Exploration

Rhea Kelly, Campus Technology

<https://campustechnology.com/articles/2017/03/23/arizona-state-u-launches-open-adaptive-lessons-on-space-exploration.aspx>



February 16, 2017 (Customization)

Learning is More Communal

Building Global Community, Marc Zuckerberg, Facebook

<https://www.facebook.com/marc.zuckerberg/building-global-community/10103596321158471/>



Building Global Community

To see comments...

Our new plans to connect the world, we then discuss products we're building and updates we're working on. Today's focus is on the most important question of all: how are we building the world we all want?

Mark Zuckerberg publishes manifesto to save the world



May 20, 2016 (Customization) Learning is More Massive agMOOCs (India)

<http://www.agmoocs.in/>



April 20, 2015 (Customization) Learning is More Massive

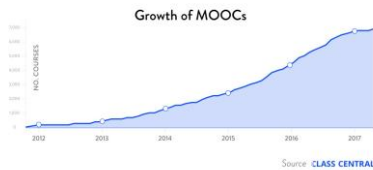
250 MOOCs and Counting: One Man's Educational Journey, Chronicle of Higher Education
<http://chronicle.com/article/250-MOOCsCounting-One/229397?cid=at>
If the MOOC movement has faded, nobody told Jima Ngel. Mr. Ngel, who lives in Port Harcourt, Nigeria, has completed and passed 250.



Jima Ngel: "I had this unrelenting fear that this miracle of free access might evaporate soon."

December 25, 2016 By The Numbers: MOOCs in 2016 Dhawa Shah, Class Central

<https://www.class-central.com/report/mooc-stats-2016/>



December 25, 2016 Class Central

<https://www.class-central.com/report/mooc-stats-2016/>



58M
Students

700+
Universities

6850
Courses

MOOCs in 2016: Analysis by Class Central

December 23, 2016 HarvardX and MITx: Four Years of Open Online Courses -- Fall 2012 - Summer 2016 Isaac Chung, MIT, and Andrew Dean Ho, Harvard

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2889438

Substit 2: Course participation and demographics

Enroll in the site and number of a typical HarvardX and MITx open online course	290
Certificate (free and paid)	244,705
Enrollments (across all content)	739,389
Participants (across all content)	4,449,034
Certificate variants per course	509
Enrollments per course	1,517
Participants per course	7,862
Percentage of female participants	25%
Percentage of bachelor's degree holders	73%
Median age	29
Percentage from the United States	29%

Note: Per-course and demographic statistics are medians of course-level statistics.

- The typical HarvardX/MITx course or module certifies 500 participants.
- Around 1,500 will explore half or more of course content.
- Around 7,500 will access the course content.

TABLE 2: PARTICIPATION AND DEMOGRAPHICS

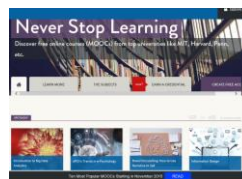
ENROLL IN 14 HARVARDX COURSES (600-1000 students, who would likely get a certificate)	290	244,705	739,389	4,449,034	509	1,517	7,862	25%	73%	29	29%
ENROLL IN 14 MITX COURSES (600-1000 students, who would likely get a certificate)	290	244,705	739,389	4,449,034	509	1,517	7,862	25%	73%	29	29%

ENROLL IN 14 HARVARDX COURSES (600-1000 students, who would likely get a certificate)

August 12, 2016 (Customization) Class Central's Top 50 MOOCs of All Time, Dhawal Shah, Class Central Blog

"Now there are close to 6,000 MOOCs from 600+ universities around the world."

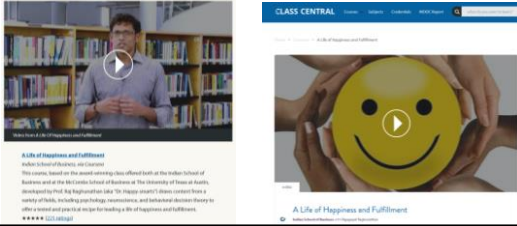
<https://www.class-central.com/report/top-moocs/>



August 12, 2016 (Customization)

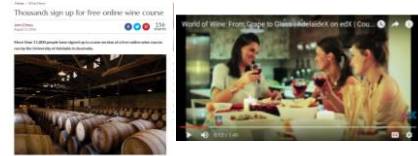
A Life of Happiness and Fulfillment
Indian School of Business, Rajagopal Raghunathan

<https://www.class-central.com/course/a-life-of-happiness-and-fulfillment>



August 30, 2016
Thousands sign up for free online wine course, John Elmes, Wine News

<http://www.decanter.com/wine-news/online-wine-course-subscribe-325646/>



March 3, 2017 (Customization)

edX Expands MicroMasters Programs With Data Science ("nanodegrees")
Digital Leadership and More, Sri Ravipati, Campus Technology

<http://campustechnology.com/2017/03/03/edx-microdegrees-prepare-eds-for-digital-leadership-and-more-229739>



April 9, 2017 (Customization)
How Open E-Credentials Will Transform Higher Education
Dan Hickey, Chronicle of Higher Education

<http://www.chronicle.com/article/How-Open-E-Credentials-Will/239739>



MOOCs and Open Education
Around the World

<http://routledge-ny.com/books/details/9781138807419/>



Type of MOOC	cMOOC	xMOOC	pMOOC
Learner Role	Active	Passive	Active
Instructor Role	Co-learner	Sage on video stage	Guide on the side
Learning Theory	Connectivism	Behaviorism	Constructivism
Primary Pedagogy	Knowledge integration	Knowledge duplication	Knowledge production
Metaphor	"We link movies"	"We watch movies"	"We make movies"
Development Approach	Learning design	Instructional design	Educational design research
Primary Type of Assessment	Self Assessment	External and/or Peer Assessment	Self and/or Client Assessment
Funding Source	Seat of the pants funding	Large external funding	Moderate client provided funding

Figure 1. Differences among three types of MOOCs (Reeves & Hedberg, 2014).

Bonk, C. J., Lee, M. M., Reeves, T. C., & Reynolds, T. H. (in press). The emergence and design of massive open online courses (MOOCs). In R. A. Reiser, & J. V. Demsey (Eds.), *Trends and issues in instructional design and technology* (4th Ed.), (pp.7). Boston, MA: Pearson Education. Available: <http://www.publicationshare.com/3>

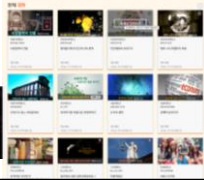
July 1, 2015 (Customization)
Chapter 14: Creating a Temporary Spontaneous Mini-Ecosystem through a MOOC
Paul Kim and Charlie Chung, Stanford University
Figure 2. Twitter thread announcing the MOOC



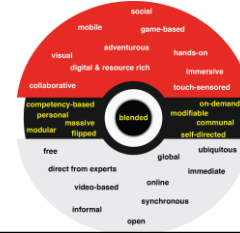
June 14, 2016 (Customization)
Chapter 15: Learning About MOOCs by Talking to Students
Charles Severance, Univ. of Michigan
Anuar Lequerica, Class Central
<https://www.class-central.com/report/dt-chuck-graduation-ceremony-python-specialization/>



August 24, 2016
K-MOOCs (and ocMOOCs and hMOOCs)
Revolutionizing online education
Professor creates courses tailored to cultural differences
Korea JoongAng Daily, Bong-Moon Kim
<http://www.kmooc.kr/>



30+ Ways Learning is Changing:
Recapping the Three Mega Trends:
Engagement, Access, and Customization



WHAT'S NEXT

January 3, 2017
College is Over
Roger Schank, LinkedIn
<http://www.sandiegouniontribune.com/news/science/sd-me-robots-juan-20161213-story.html>



College is Over

May 4, 2017**Prepare For Future Learning**

Dr. Marie Bountrogianni, Dean, The Chang School, Ryerson U,
Huffington Post

http://www.huffingtonpost.ca/dr-marie-bountrogianni/prepare-for-future-learn_b_16497736.html

**January 30, 2017****1. Professor Einstein PDA's**

<http://www.usatoday.com/story/tech/2017/01/30/robotic-hatita-now-serving-really-fast/9588780/>



Professor Einstein, an educational Wi-Fi connected robot is on display at the Hanson Robot display during the opening day of Consumer Electronics Show 2017. (Photo: Robert Hanashiro, USA TODAY)

<http://www.usatoday.com/story/tech/2017/01/30/robotic-hatita-now-serving-really-fast/9588780/>

February 27, 2017**2. World Knowledge Refreshment Stations**

http://www.thefivingmoon.com/43ancients/920the/Library_Alexandria.html

**February 27, 2017****3. Robot Collaborators/Partners**

http://www.thefivingmoon.com/43ancients/920the/Library_Alexandria.html

**May 19, 2016****Pepper the robot needs U.S. programmers, Marco della Carva, USA Today**

<http://www.usatoday.com/story/tech/news/2016/05/18/people-calling-all-android-robot-programmers/8446177/>

Usual internal link: <http://trainingshare.com/usa2.html>

New download link: <https://www.dropbox.com/s/hxcuwgqvaj20oiv/pepper-the-robot2.mp4?dl=0>

**March 14, 2016****Artificial Intelligence and Robots**

Paul Basken, The Chronicle of Higher Education

<http://www.chronicle.com/article/Artificial-Intelligence-and-Robots/234444>

Behind a Computer's Surprise Victory,
Hints of Global Economic Upheaval



Forget the robots — here come the geniuses!



April 24, 2017**Brace yourselves: AI is set to explode in higher ed in the next 4 years**

Laura Ascione, Campus Technology
<http://www.acampusenews.com/it-news/ai-explode-next-4-years/>



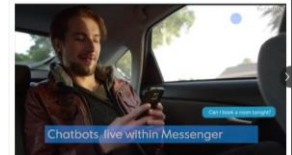
Brace yourselves: AI is set to explode in higher ed in the next 4 years

BY LAURA ASCIONE, ASSISTANT DEAN, UNIVERSITY SERVICES, BROWN, LARSEN
 April 24th, 2017

As AI grows in the education sector, its impact could be felt in student learning programs, websites and admissions programs

April 17, 2017**Facebook's future will blend physical and digital worlds**

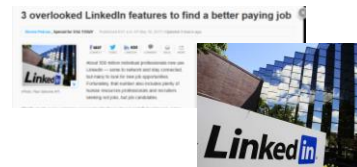
Jessica Guynn, USA Today
<http://www.usatoday.com/story/tech/columnist/jessicaguynn/2017/04/17/facebook-future-physical-digital-world/4082490/>

**February 27, 2017****3. Three Part Resumes/CV's**

http://www.thefivingmoon.com/33ancients/02files/Library_Alexandria.html

**May 10, 2017****3 overlooked LinkedIn features to find a better paying job**

Steven Petrow, USA Today
<http://www.usatoday.com/story/tech/columnist/stevenpetrow/2017/05/10/3-overlooked-linkedin-features/40102490/>

**July 28, 2016****Knod**

(Per Dr. Michael Mayrath: work with employers to diagnose skills gaps, then provide a platform to deliver content to build those skills in a learn by doing experiences, real projects with employers)

<http://www.knod.net/>

**February 27, 2017****4. Global Learning Partner or PBL Team Selection Walls**

http://www.thefivingmoon.com/33ancients/02files/Library_Alexandria.html



10. The Age of Personalization



The Future of Learning Plague

The new "Four Horsemen" of the Apocalypse:

Quality, Copyright, Plagiarism, and Assessment...



May 9, 2017

Online Exam Proctoring Catches Cheaters, Raises Concerns Jean Dimeo, Inside Higher Ed

<https://www.insidehighered.com/digital-learning/article/2017/05/09/online-exam-proctoring-catches-cheaters-raises-concerns>

Online Exam Proctoring Catches Cheaters, Raises Concerns

Many administrators and faculty members say online exam proctoring works and is a vital to ensuring online

By Jean Dimeo May 10, 2017



March 27, 2017

What will learning look like in 2025?

John Cavanaugh, eCampus News

<http://www.ecampusnews.com/features/future-of-on-campus-news/learning-look-like-2025/7all>

- 11. Orientation through VR
- 12. Scheduling through AI
- 13. Fully-Immersive Course Content
- 14. AI Analytics



June 3, 2016

Virtual Reality Lets Med Students Experience What It's Like To Be 74

Elyse Wanshel, Huffington Post

<http://ht.ly/bSpe300XEPJ>

Virtual Reality Lets Med Students Experience What It's Like To Be 74

This could be empathy 2.0 for the average med student, who is 24.

By Elyse Wanshel



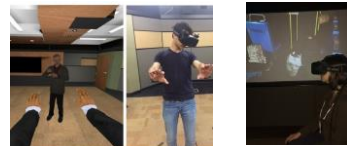
I don't remember what I'm supposed to do

April 10, 2016

Virtual reality tested by NFL as tool to confront racism, sexism

Marco della Cava, USA Today

<http://www.usatoday.com/story/tech/news/2016/04/10/virtual-reality-tested-tool-confront-racism-sexism/8267400/>



One VR diversity demo places the user in the body of an African-American woman as a white male avatar gets aggressive mere feet away. (In one Stanford VR demo, subjects are made to feel what it is like to be homeless, as in this scene where the user is transported into the body of a woman riding the bus with a few possessions.)

October 25, 2016
Osso VR Mixed Reality Promo

<http://ossovr.com/>
https://www.youtube.com/watch?v=yes_GETJa6o



March 24, 2017
**Artificial Intelligence Market in the US
 Education Sector 2017-2021**

<http://www.researchandmarkets.com/research/5lqhzr/artificial>
AI Market to Grow 47.5% Over Next Four Years

Richard Chang, Campus Technology

<https://campustechnology.com/articles/2017/03/23/ai-market-grows-47-5-over-next-four-years.aspx>



**AI Market to Grow 47.5% Over
 Next Four Years**

By Richard Chang | 03/24/17



March 2017 (Customization)
Coollest tech from SXSW
(Robotic AI conversationalist AI
developed by Osaka University)

<https://www.usatoday.com/tech/>



March 28, 2017
**Elon Musk's Neuralink wants to plug
 into your brain, Marco della Cava, USA**
Today (includes 34 second video)

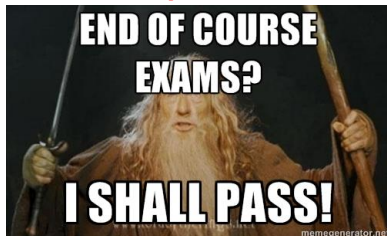
<https://www.usatoday.com/story/tech/healthtech/2017/03/27/elon-musk-wants-to-plug-into-your-brain/10711310/>
<http://www.pennlive.com/tech/2017/03/27/elon-musk-wants-to-plug-into-your-brain/10711310/>



Elon Musk wants to link human brains with computers. The CEO of SpaceX and Tesla Motors is engineering just such a connection through another company he has launched, called Neuralink. CNN TODAY



Poll #5:
Who is now interested in Education
20/20...?



**We are entering a jumping
 off point...**

(South University of Science and Technology of
 China, Wednesday June 10, 2015)



Things are heating up for PBL!



Education 20/20 is coming within reach!



Remember for Education 20/20
to make an impact:
"I cannot do this alone."

"I cannot do this alone."
"I cannot do this alone."
"I cannot do this alone."



Any Questions or Comments?

Slides at: TrainingShare.com
Papers: PublicationShare.com
Free book: <http://tec-variety.com/>
Email: curt@worldisopen.com

