

## Education 20/20 meets Education 3.0: Visions of Our Changing Learning World!

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<http://mypage.iu.edu/~cjbonk/>



## Talk Overview

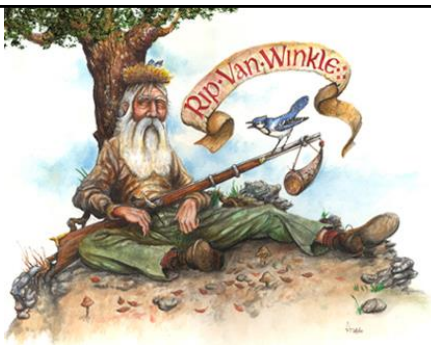
1. Education 20/20 and Education 3.0
2. Artificial Intelligence vs. Intelligence Augmentation
3. The Evolution of E-Learning
4. Megatrends of Learning: Engagement, Access, and Customization  
(30 ways that learning is changing...)
5. Future Trends and Ideas



(Circa Confucius 551–479 BCE)



**Academos**  
**Plato Circa 428–347 BCE**



**What happens to  
sleeping students?**

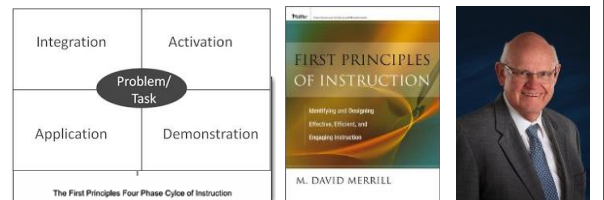


## Education 20/20



## Bonk's Last Principles of Teaching/Instruction

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



## 1. The Principle of Flexibility

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



## 2. The Principle of Convenience

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



## 5. The Principle of High Expectations

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



## 6. The Principle of Choice and Options

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



## 8. The Principle of Support and Feedback

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



## 11. The Principle of Sharing

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



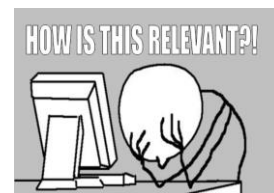
## 12. The Principle of Nontraditional Learning

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



## 14. The Principle of Relevance and Meaningfulness

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



## 15. The Principle of Trial and Error (i.e., it is ok to fail)

<http://travelinmedman.blogspot.com/2011/09/bonks-test-principles-of-instruction.html>



## 16. The Principle of Expanded Resources

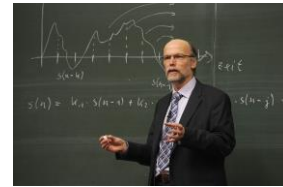
<http://travelinmedman.blogspot.com/2011/09/bonks-test-principles-of-instruction.html>



## Learning is Changing...



## Education 3.0?



"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](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/issue/index.nhn/fm/article/view/1625/1540>

### EDUCATION 3.0

Table 3: Educational generations in higher education			
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 freer/open educational resources for students within disciplines, sometimes across institutions	Free/open educational resources created and reused 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 rooms for student creativity; social networking outside traditional boundaries of discipline, institution, nation

**August 21, 2016**

**ST Future Economy Roundtable:  
Is Asia ready for the Fourth Industrial Revolution?**  
The Straits Times  
<http://www.straitstimes.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."**

**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, neuro-technological brain enhancements, genetic editing, etc.)  
<http://www.trainingshare.com/fourth-industrial-revolution-video-clip-about-lab/>

**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



**August 15, 2016**  
**The Maker Movement in Education:**  
**A New Global Transformation**  
 Paul Kim, ICT in Education, UNESCO  
<http://www.unesco.org/education/ict-online-resources/databases/ict-in-education-databases/item/article/the-maker-movement-in-education-a-new-global-transformation/>




**August 17, 2016**  
**Research: 3D Printing Market to Double by 2020**  
 Joshua Bolkan, Campus Technology  
<https://campustechnology.com/articles/2016/08/17/report-3d-printing-market-to-double-by-2020.aspx>

**Research: 3D Printing Market to Double by 2020**  
 By Joshua Bolkan 08/17/16

The 3D printing market will hit \$24.4 billion in 2020, according to a new report from International Data Corp. (IDC). That total is more than double the revenue projected for this year and would represent a 24.1 percent compound annual growth rate over the course of the period forecast.




**April 13, 2016**  
**The Fourth Industrial Revolution:**  
**What it means, how to respond**  
 Klaus Schwab, Founder and Executive Chairman, World Economic Forum  
<http://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>  
<http://www.trainingshare.com/fourth-industrial-revolution-video-clip.php>  
<http://www.tubechop.com/watch/8280981>





The world is really open to learning.

**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/hxcuwgqvaj20olv/pepper-the-robot2.mp4?dl=0>

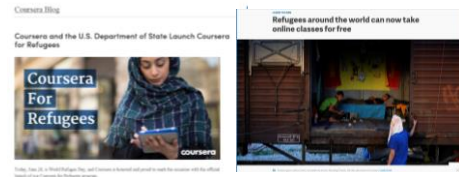



**December 15, 2016**  
**How robots will change the American workforce**  
 Gary Robbins, The San Diego Union-Tribune (video: 1:17)  
<http://www.sandiegouniontribune.com/news/science/sd-me-robots-jobs-20161213-story.html>

How robots will change the American workforce

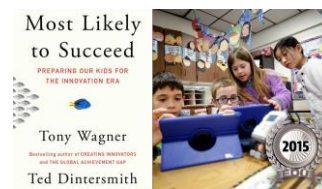


**June 7, 2016****Teaching refugees how to code, CNN Money**<http://money.cnn.com/video/technology/2016/06/07/recorded-flation-refugees-code.commonmoney/index.html>**June 20, 2016****Coursera on a Mission to Help Refugees****Lauren Camera, US News and World Report**<http://www.usnews.com/news/articles/2016-06-20/coursera-on-a-mission-to-help-refugees>**July 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/>**September 21, 2016****Udacity Unveils Nanodegree Program for Self-Driving Car Engineers****Sri Ravipati, Campus Technology**<http://campustechnology.com/articles/2016/09/21/udacity-unveils-nanodegree-program-for-self-driving-car-engineers.aspx>**Poll:**

**Read any good books lately detailing this shift?**

**Most Likely to Succeed (2015):****Preparing Our Kids for the Innovation Era****Tony Wagner and Ted Dintersmith**<http://www.tonywagner.com/1933>

### Creative Schools (2015): The Grassroots Revolution That's Transforming Education

Sir Ken Robinson

<http://sirkenrobinson.com/creative-schools-the-grassroots-revolution-that-is-transforming-education/>



### Big Magic (2015): Creative Living Beyond Fear

Elizabeth Gilbert

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

[https://www.ted.com/talks/elizabeth\\_gilbert\\_big\\_magic\\_creative\\_living\\_beyond\\_fear](https://www.ted.com/talks/elizabeth_gilbert_big_magic_creative_living_beyond_fear)

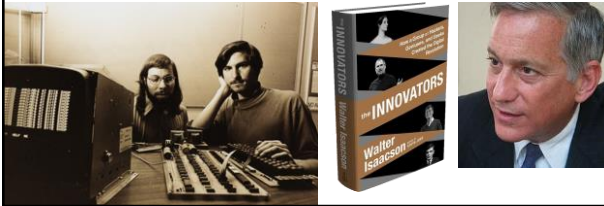


### The Innovators:

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/9781476708690>



### 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-Between/dp/0062266483>



### December 15, 2016

The Digital Era: How 50 years of the information age transformed college forever, Ben Myers & Erica Lusk, *The Chronicle of Higher Education*

<http://www.chronicle.com/interactives/50-years-of-technology>



### Poll #7:

What if you read these books?



## Artificial Intelligence

### John McCarthy, Stanford AI Lab

<http://www.amazon.com/Machines-Loving-Grace-Common-Between/dp/0062266683>

John McCarthy

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



## March 14, 2016

### Artificial Intelligence and Robots

#### Paul Basken, The Chronicle of Higher Education

<https://www.chronicle.com/article/Artificial-Intelligence-and-Robots/23886>

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

By Paul Basken



Forget the robots — here come the geniuses!



## 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/0062266683>



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



## June 10, 2015

### Augmented reality promises 'superpowers', and people are listening

#### The USA Today, Marco della Cava

<http://www.usatoday.com/story/tech/news/2015/06/10/augmented-reality-superpowers/28274861/>

<http://www.usatoday.com/story/tech/news/2015/06/10/augmented-reality-superpowers/28274861/>

Microsoft HoloLens: <https://www.youtube.com/watch?v=a7TncdPpysA>



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



## 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

<http://ht.ly/bSpe300XEPJ>

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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-nfl-racism-sexism/23274861/>



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's 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.)



## Knowledge Navigator (1987) Apple Computer

<http://www.youtube.com/watch?v=chick49wEoc>



## October 14, 2011 Siri (co-founder Tom Gruber)

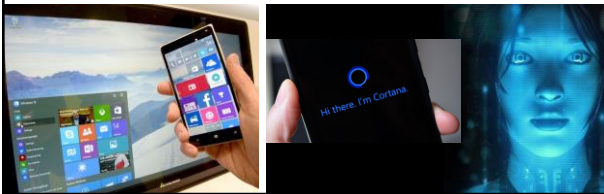
<http://www.imore.com/siri>



## August 22, 2016 Microsoft acquires AI assistant start-up Genee

Marco della Cava, USA Today (Cortana)

<http://www.usatoday.com/story/tech/news/2016/08/22/microsoft-acquires-ai-assistant-startup-genee/9140092/>



## 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 "Chirp"), Elizabeth Weise, USA Today

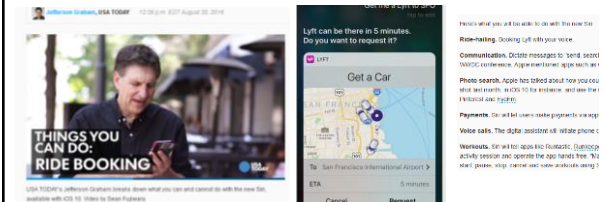
<http://www.usatoday.com/story/tech/news/2016/05/09/personal-digital-assistants-are-on-the-rise-and-they-want-to-talk/822241/>



## August 30, 2016 New Siri to work with apps in iOS 10, but not all

Jefferson Graham, USA Today

<http://www.usatoday.com/story/tech/news/2016/08/30/new-siri-work-apps-ios-10-not-all/9418482/>



## The World is Open: How Web Technology Is Revolutionizing Education

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



Awareness Level	Percentage
Very aware	6.9%
Aware	12.2%
Somewhat aware	15.2%
Not aware	65.7%


A donut chart showing the distribution of responses for the statement 'The use of the Internet is a waste of time'. The chart is divided into four segments: 'Very Agree' (11.9%), 'Agree' (16.8%), 'Somewhat Agree' (58.3%), and 'Disagree' (5.9%).

Response	Percentage
Very Agree	11.9%
Agree	16.8%
Somewhat Agree	58.3%
Disagree	5.9%

Country	OER as Primary (%)	OER as Supplement (%)	Non-OER ADOs (%)
Canada	4%	3%	93%
Colombia	11%	18%	71%
Netherlands	13%	13%	74%
Belgium	11%	0%	89%
England	2%	9%	89%
Austria	4%	44%	52%
Slovenia	0%	6%	94%
Portugal	0%	1%	99%

These findings are more were published in a new report from Gengage Learning titled "Open Educational Resources and the Evolving Higher Education Landscape." In which the education community surveyed more than 500 teaching faculty, industry experts and OER primary adopters, supplemental adopters and non-adopters.

Considering that one in five college



Mathematics and computing OER were the


**UB** University Business  
 Adaptive  CAMPUS COMMERCE SOLUTION



Open educational resources have grown over the last few years from one-off add-ons to single courses to the basis of a

The University of Maryland's open source textbook initiative, known as "MOST," has guided faculty through more than 50 OER adoptions. The program helps instructors assemble resources to significantly keep down the cost of course materials.

Figure 1 displays nine course thumbnails arranged in a 3x3 grid. Each thumbnail includes a title, a brief description, and a list of topics. The courses are:

- Introduction to Business Engineering** (Urban planning): This course is designed to provide a comprehensive overview of the field of urban planning. It covers the history, theory, and practice of urban planning, as well as the role of the urban planner in society. Topics include: Urban planning, Urban design, Urban development, Urban infrastructure, Urban policy, Urban law, Urban economics, Urban sociology, Urban anthropology, Urban history.
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**January 3, 2017**

## College is Over

Roger Schank, LinkedIn

<http://www.sandiegouniontribune.com/news/science/sd-me-robots-jobs-20161213-story.html>



College is Over

## 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.

**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 3,000 pages, with an expressed hope of reaching

**April 4, 2016**

## MIT OpenCourseWare is 15!

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



**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.com.com/2016/08/06/technology/world-wide-web-25-years-old/index.htm#76id=hp-stack-dom>



**1971**

## Email is 35 years old!

Raymond Tomlinson, inventor of modern email, dies, USA Today (March 7, 2016)

<http://www.usatoday.com/story/tech/2016/03/07/raymond-tomlinson-inventor-modern-email-dies/8142454/>

Raymond Tomlinson, inventor of modern email, dies





## September 7, 2016 (Engagement)

### Learning Apps - Personalized Interfaces for Performance

Elliott Masie's Learning TRENDS; [trends@masie.com](mailto:trends@masie.com)

Personalized for an employee based on their development goals, competency gaps and changing skill/information matrix in the workplace. A Learning App could provide a just in time set of content, context, collaboration connections, coaching sets and real time feedback.

Learningpool: <https://www.learningpool.com/services/apps-for-learning>



## August 31, 2016 (Engagement)

### Samsung ticks forward with new Gear S3 smartwatch

Edward C. Baig and Eli Blumenthal, USA TODAY

<http://www.usatoday.com/story/tech/2016/08/31/samsung-ticks-forward-new-gear-s3-smartwatch/8964326/>



Samsung Pay on the Gear S3. (Photo: Eli Blumenthal, USA TODAY)

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

## August 23, 2016 (Engagement)

### Reef Videoconferencing

(Great Barrier Reef, Australia)

<http://www.preef.com.au/education/at-reef-hq-queue/reef-videoconferencing>



## July 14, 2016 (Engagement)

### Shindig

<http://events.shindig.com/event/fff-wheeler>



## July 22, 2016 (Engagement)

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

Gabriel Sandoval, Chronicle of Higher Education



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.

## May 7, 2015 (Engagement)

### Learning is More Adventurous

Aaron Doering, Chasing Seals, TEDx

<http://chasingseals.com/>

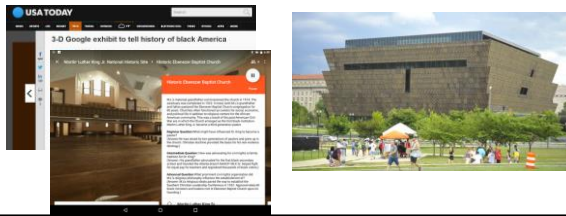
<https://twitter.com/chasingseals>





### September 14, 2016 (Engagement) 3-D Google exhibit to tell history of black America

Jessica Guynn, USA Today



### April 2, 2015 (Engagement) Learning is More Immersive

*The Quest to Put More Reality in Virtual Reality.*  
Review: Samsung rises to challenge with Galaxy S6 and S6 Edge,  
Edward Balg, USA Today



NextVR crewmembers set up their virtual reality cameras at an NBA game, allowing viewers of the live event to see the game from a variety of positions in the arena.

### January 7, 2016 (Engagement) Google Cardboard saves baby's life

CNN, Elizabeth Cohen

<http://www.cnn.com/2016/01/07/health/google-cardboard-baby-saved/index.html>

Google Cardboard saves baby's life

By Elizabeth Cohen, CNN Senior Medical Correspondent

Updated 5:46 PM EST, Thursday, January 7, 2016



### 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



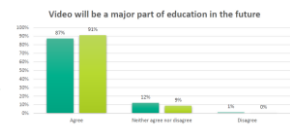
### How Learning is Changing: Mega Trend #2. Pervasive Access



### The Age of Videopedia... July 18, 2016 (Access)

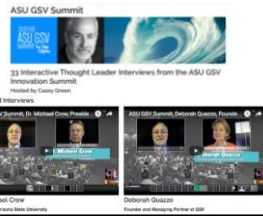
Survey: Video Usage in Ed Continues Ramp-up,  
Dian Schaffhauser, THE Journal

<https://thejournal.com/articles/2016/07/18/research-video-usage-in-ed-continues-ramp-up.aspx>

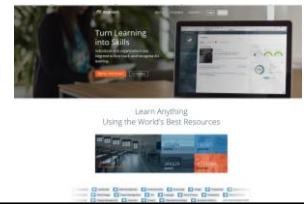


Source: <http://reviews-bonuses.net/videopedia-pro-1-0-reviews-bonuses/>

**May 4, 2016 (Access)**  
**What I Learned at the ASU GSV Summit**  
**Kenneth Green, Inside Higher Ed**



**September 14, 2015 (Access)**  
**Credit for Watching a TED Talk? A new platform**  
**aims to help employers track casual learning**  
**Chronicle of Higher Education, Jeffrey R. Young**  
**Degreed: <http://degreed.com/>**



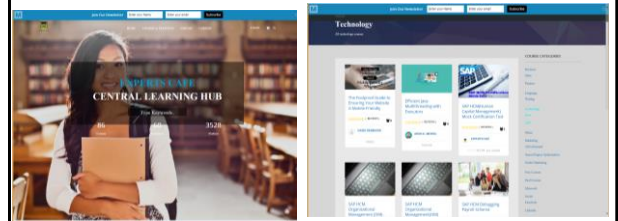
**May 14, 2016 (Access)**  
**Learning is more Immediate...**  
**Mastodon bones offer clues of earliest humans in**  
**North America, Faith Karimi, CNN**

Abstract: <http://advances.sciencemag.org/content/2/5/e1600375.full>  
 Full Article: <http://advances.sciencemag.org/content/2/5/e1600375.full>  
 Supplemental materials (PDF): <http://advances.sciencemag.org/content/2/5/e1600375.full.pdf>  
 PDF: <http://advances.sciencemag.org/content/2/5/e1600375.full.pdf>

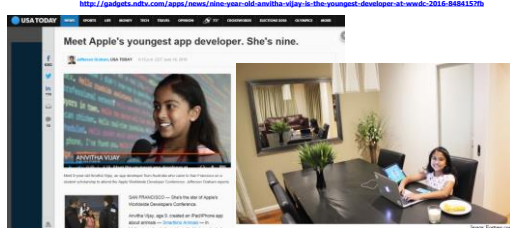
Mastodon bones offer clues of earliest humans in North America



**June 20, 2016 (Access)**  
**The Expert Cafe**  
**<http://expertscafe.com/>**



**June 13, 2016 (Access)**  
**Nine-Year-Old Anvitha Vijay is the Youngest**  
**Developer at WWDC (age 9)**  
**(Apple Worldwide Developers Conference), Gadgets**



**May 4, 2016 (Access)**  
**This Mongolian Teenager Aced a MOOC**  
**Now He Wants to Widen Their Impact**  
**(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-Now-He-Wants-to-Widen-Their-Impact/236362>**

THE CHRONICLE OF HIGHER EDUCATION  
 This Mongolian Teenager Aced a MOOC. Now He Wants to Widen Their Impact.



**May 19, 2016 (Access)**

**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>



## How Learning is Changing: Mega Trend #3. Customization



**September 7, 2016 (Customization)**

**The Future of Collaboration Spaces**  
**Encompasses Video**

Interactive, Mobil, Julie Johnston, IU, Campus Technology  
<http://campustechnology.com/article.aspx?CID=2016090701>

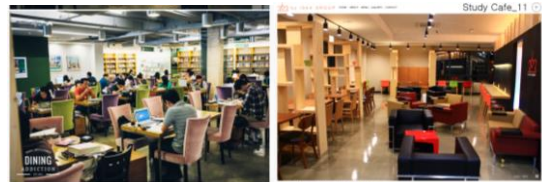


In the Indiana University Media School lobby, a large display will showcase student work and provide interactive sessions. (photo by Allen Major/The Media School @ Indiana University)

**August 1, 2016 (Customization)**

**363 by Idea Group; Study Café**  
**Meeting Place; Idea Space (Seoul, Korea)**

[http://363.co.kr/?wp\\_page\\_id=244](http://363.co.kr/?wp_page_id=244)  
[http://363.co.kr/wp/?wp\\_gallery=study-cafe\\_11](http://363.co.kr/wp/?wp_gallery=study-cafe_11)



**September 28, 2016 (Customization)**

**Bookshare, An accessibility online**  
**library for people with disabilities**

<https://www.bookshare.org/>



**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>



## May 20, 2016 (Customization) agMOOCs (India) <http://www.agmoocs.in/>



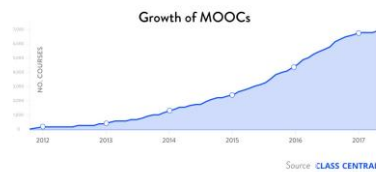
## September 15, 2015 Customization) GROOCs are MOOCs for Social Impact

Social Learning for Social Impact, edX  
Join the world's first GROOC – a MOOC for groups – to collaborate with others globally and create social change.

<https://www.edx.org/course/social-learning-social-impact-impact-impact>  
<https://www.youtube.com/watch?v=3d4wvW7p3d4>



## December 25, 2016 By The Numbers: MOOCs in 2016 Dhawa Shah, Class Central <https://www.class-central.com/report/mooc-stats-2016/>



## 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=2889436](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2889436)

Exhibit 2: Course participation and demographics

Exhibit 2a: The size and makeup of a typical HarvardX and MITx open online course

Courses (including repeats and modules)	286
Certificates (free and paid)	244,705
Enrollments (across all content)	729,369
Participants (across all content)	6,449,034
Certificate earners per course	568
Enrollments per course	1,517
Participants per course	7,903
Percentage of female participants	23%
Percentage of bachelor's degree holders	73%
Median age	39
Percentage from the United States	29%

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

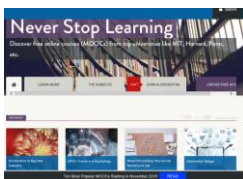
- The typical HarvardX/MITx course or module certifies 500 participants.
- Around 1,500 will enroll per half or more of course content.
- Around 7,900 will access the course content.



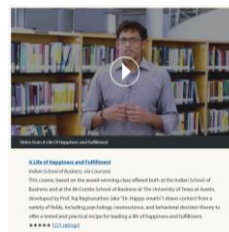
## August 12, 2016 (Customization) Class Central's Top 50 MOOCs of All Time, Dhawal Shah, Class Central Blog

"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/mooc/2860/courses-a-life-of-happiness-and-fulfillment>





## August 5, 2015 (Customization) How Nanodegrees Are Disrupting Higher Education

John Waters, Campus Technology

<http://campustechnology.com/articles/2015/08/05/how-nanodegrees-are-disrupting-higher-education.aspx>

### How Nanodegrees Are Disrupting Higher Education

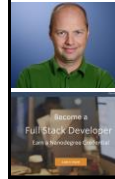
How "nanodegree" online certificate programs are changing the educational pathway to career training education.



## January 13, 2016 (Customization) Degree gets you a tech job — or your money back

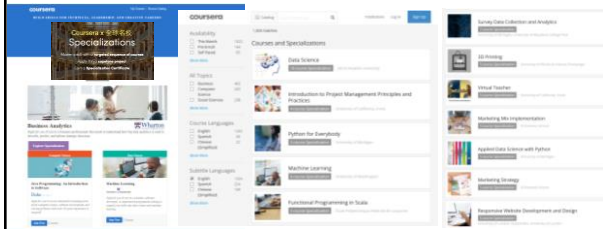
Marco della Cava, USA Today

<http://www.usatoday.com/story/tech/news/2016/01/13/degree-guarantee-tech-job-your-money-back/78703226/>



## July 28, 2016 (Customization) Coursera Specializations email

Starting Monday August 1st: 9 Top Specializations



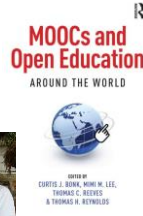
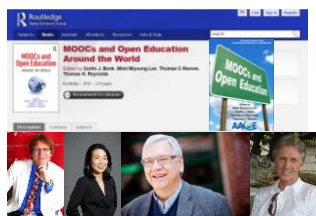
## July 28, 2016 (Customization) Udemy: "Get cozy with a class"

<https://www.udemy.com/>



## MOOCs and Open Education Around the World

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



## 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)**  
**World First: University of Michigan's Dr. Chuck Holds a Graduation Ceremony for MOOC Students**  
 Anuar Lequerica, Class Central  
<https://www.class-central.com/report/dr-chuck-graduate-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**



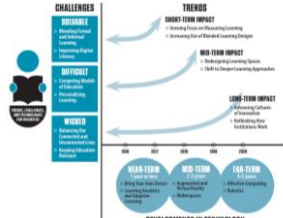
**WHAT'S NEXT**



**Where are we headed?**  
**Where to find Education 3.0?**  
**How to create Education 20/20?**



**February 2016**  
**NMC Horizon Report > 2016 Higher Ed Edition**  
<http://www.nmc.org/publication/nmc-horizon-report-2016-higher-edition/>  
<http://cds.nmc.org/media/2016-nmc-horizon-report-the-4th.pdf>  
 Report from the NMC Horizon Report > 2016 Higher Education Edition



**September 11, 2016**

### Research: Robots Give Chronically Ill Kids Valuable Social Ties with School

Dian Schaffhauser, THE Journal

<https://thejournal.com/articles/2016/09/12/robots-give-chronically-ill-kids-valuable-social-ties-with-school.aspx>

#### Penn State Students Attend Class via Robot

By Siri Ransgall 09/09/16



#### Research: Robots Give Chronically Ill Kids Valuable Social Ties with School

By Dian Schaffhauser 09/10/16

**October 23, 2016**

### Ben Gose, The Chronicle of Higher Education

<http://www.chronicle.com/article/When-the-Teaching-Assistant-is/238114>

#### When the Teaching Assistant Is a Robot

Faculty members experiment with artificial intelligence in the classroom



What was a computer science professor at Georgia Tech, is now teaching in the classroom. He's using a robot teaching assistant named "Tutor" to help students learn.

**December 26, 2016**

### Glimpse into the Future of Learning

Jenny Abamu, New Learning Times (NLT)

[https://newlearningtimes.com/cms/articles/60222/06c\\_source=facebook\\_medium=Ed&c\\_name=December%202016%20NewLearningTimes](https://newlearningtimes.com/cms/articles/60222/06c_source=facebook_medium=Ed&c_name=December%202016%20NewLearningTimes)
**September 2, 2016**

### Humans, the Latest MOOC Feature

[Introduction to Philosophy: God, Knowledge and Consciousness](https://www.insidehighered.com/news/2016/09/02/massachusetts-institute-technology-experiments-instructor-grading-massive-open)

(\$300 USD for an identity-verified certificate)

Carl Straumsheim, Inside Higher Ed

<https://www.insidehighered.com/news/2016/09/02/massachusetts-institute-technology-experiments-instructor-grading-massive-open>

#### Humans, the Latest MOOC Feature



MIT experiments with instructor grading in massive open online courses as a way to expand teaching and learning opportunities for students and instructors.

September 2, 2016

By Carl Straumsheim



One of the Massachusetts Institute of Technology's most popular massive open online courses is adding a feature not seen in any of its other humanities MOOCs: instructors grading essays.

**May 4, 2016**

### MOOC 4.0: The Next Revolution in Learning & Leadership

Otto Scharmer, Huffington Post

[http://www.huffingtonpost.com/otto-scharmer/mooc-40-the-next-revolution\\_b\\_7209604.html](http://www.huffingtonpost.com/otto-scharmer/mooc-40-the-next-revolution_b_7209604.html)
**July 21, 2016**

### 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/87340910/>


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)

## Talk Reminder

1. Education 20/20 and Education 3.0
2. Artificial Intelligence vs. Intelligence Augmentation
3. The Evolution of E-Learning
4. Megatrends of Learning: Engagement, Access, and Customization  
(30 ways that learning is changing...)
5. Future Trends and Ideas

## Things are heating up!

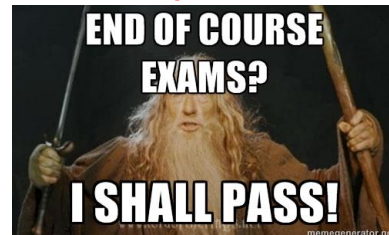


## Education 3.0 is coming within reach!



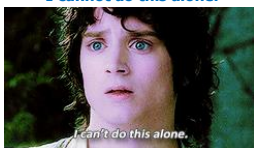
## Poll #10:

**Who is now interested in Education  
20/20...?**



## Remember for Education 20/20 to meet Education 3.0: "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](http://TrainingShare.com)  
Papers: [PublicationShare.com](http://PublicationShare.com)  
Free book: <http://tec-variety.com/>  
Email: [curt@worldisopen.com](mailto:curt@worldisopen.com)

