

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

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<http://curtbonk.com/>



Talk Overview

1. Jobs are changing
2. Education 20/20 and the Role of the Instructor
3. First and Last Principles of Instruction
4. Megatrends of Learning: Engagement, Access, and Customization (30 ways that learning is changing...)
5. Future Trends and Ideas



(Circa Confucius 551–479 BCE)



November 28, 2017
Automation could kill 73 million U.S. jobs by 2030

Paul Davidson, USA Today

<https://www.usatoday.com/story/tech/2017/11/28/automation-jobs-2030/1000000000/>

Video (1:20): <http://curtbonk.com/automation.html>

Video (1:20): <http://curtbonk.com/automation2.html>

Automation could kill 73 million U.S. jobs by 2030



September 18, 2018
Machines will create 58 million more jobs than they displace by 2022, World Economic Forum says (133 million jobs will emerge and 75 million may be lost)

Hamza Shaban, The Washington Post

<https://www.washingtonpost.com/technology/2018/09/18/automation-jobs-2022-world-economic-forum-says/2018/09/18/>

Machines will create 58 million more jobs than they displace by 2022, World Economic Forum says



March 29, 2017**Every industrial robot takes up to 6 jobs, study finds**

Steve Goldstein, MarketWatch

<http://www.marketwatch.com/story/every-industrial-robot-takes-up-to-6-jobs-study-finds-2017-02-29>

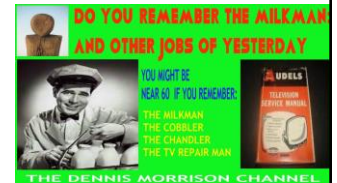
Video: 1:46

<http://curtbonk.com/futureandroids.html>Video: :49-1:12: <http://curtbonk.com/futureandroids2.html>Video: :01 to :49: <http://curtbonk.com/futureandroids3.html>Video: 01-:25: <http://curtbonk.com/futureandroids4.html>**April 30, 2017****Education 1.0****'Those Jobs Are Gone'**

Steve Kolowich, The Chronicle of Higher Education

<http://www.chronicle.com/article/Those-Jobs-Are-Gone/23864>

'Those Jobs Are Gone'

**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.amaa.com/TheMotherOfAllInventions> (Source: Common-Beliefs/10/10/2012/26565)

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

**September 26, 2018****Remember Education 2.0?**

The rise and fall of the company behind 'Reader Rabbit' and all your favorite educational games

Abigail Cain, The Outline

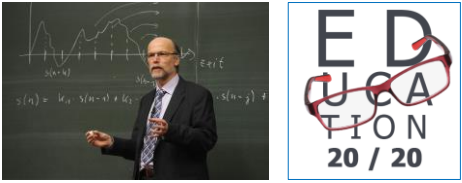
<https://theoutline.com/post/8222/reader-rabbit-history-the-boring-utopian-venture-company-sandiego-tech-1980s-1990s>**Fast Forward 30+ Years...****"Anyone can now learn anything from anyone at any time."****The Creation of Effective Learning Environments**<http://study.com/academy/lesson/learning-environment-in-the-classroom-definition-importance.html>

July 29, 2016
Reimagine Your Learning Space:
Starbucks Your Classroom!
 Oskar Cymerman, Teaching Channel
<https://www.teachingchannel.org/blog/2016/07/29/starbucks-your-classroom/>



Sterile, industrial-era rows aren't very attractive or motivating. Even more, I've become convinced that traditional educational settings dull the senses...I believe the "Starbucks" environment will promote that freedom and movement. Freedom is the key ingredient to social-emotional well-being and deeper learning. Rows and columns constrict. They hold and stifle. That is the truth. That is the reality in many U.S. classrooms today. But no longer in mine. Never again.

Education 3.0...Education 20/20



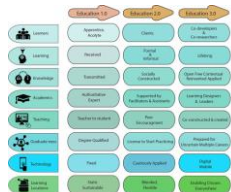
"In Education 3.0, classrooms would move away from lectures, such as this one, to having class time be spent on discussions and projects, using digital technology."
 (Per Wikipedia: https://en.wikipedia.org/wiki/Education_3.0)

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/issue/index.php/first/article/view/1625/1540>

EDUCATION 3.0

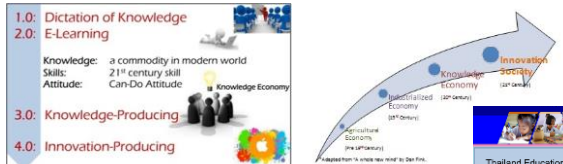
| Characteristics | Education 1.0 | Education 2.0 | Education 3.0 |
|---------------------------|---|--|--|
| Primary role of professor | Source of knowledge | Guide and source of knowledge | Orchestrator of collaborative knowledge creation |
| Content arrangements | Traditional copyright materials | Copyright and freeware educational resources for students within disciplines, sometimes across institutions | Freely open educational resources created and reused for students across multiple institutions, disciplines, nations, supplemented by original materials created for them |
| Learning activities | Traditional, essay, assignments, tests, some groupwork within classroom | Traditional assignment approaches transferred to more open technologies; increasing collaboration in learning activities; will largely be 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 |

September 18, 2017
Education 1.0 to 3.0
 Gilly Salmon, University of Liverpool, UK
<http://www.gillysalmon.com/learningfutures.html>



EDUCATION 3.0

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)



1.0: Dictation of Knowledge
 2.0: E-Learning
 Knowledge: a commodity in modern world
 Skills: 21st century skill
 Attitude: Can-Do Attitude
 Knowledge Economy
 3.0: Knowledge-Producing
 4.0: Innovation-Producing
 Innovation Society
 Thailand Education 4.0

November 8, 2018
Learning is More Personalized
AI Question Asking
 (Paul Kim keynote in Taiwan; Education 4.0 Conference)
<https://www.facebook.com/digitalschema>
<https://www.facebook.com/digitalschema/videos/10217854957270186/>



Question Answering: Level 1 – Level 5

Example 1:
 Question: What is turbulence?
 Answer: Turbulence or turbulent flow is any pattern of fluid motion characterized by chaotic changes in pressure and flow velocity.
 Level: question: 95.999913% confidence

Example 2:
 Question: Why is turbulence dangerous to small airplanes?
 Answer: Water turbulence is exacerbated by a pair of vortices that spin from the wingtips. The vortices are mostly created when a plane is flying low and the wings are working hardest to produce lift. The bigger the plane, the bigger the vortices. The most potent vortices have smaller planes more vulnerable should they run into one.
 Level: question: 99.999998% confidence

Level 1

- When did Elon successfully launch the SpaceX program?
- Who admitted that launching the car into space was "kind of silly and fun"?

Level 2

- What are the things Tesla designed?
- What were the things Tesla couldn't determine the cause of?

Level 3

- How do you compare Elon Musk and Nicolas Tesla?
- How is Mars different from Jupiter?

Level 4

- Why did Tesla built a plant in Colorado, not in New York?
- Why did Tesla at first consider whether they were "electrical disturbances as are produced by the sun"?

Level 5

- If he did not devise ever-more sensitive receivers to detect these waves, what could have been the consequence?
- If he did not introduce the AC motor in the late 1880, what would have been the consequence?

(Paul Kim, Taiwan, November 2018)

July 24, 2018

The 100-Year Life:
 Living and Working in an Age of Longevity
 Lynda Gratton and Andrew Scott

<http://www.amazon.com/100-Year-Life-400-Working-Longevity/dp/1543624634>

<http://www.100yearlife.com/>

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/>
 (Unquestion, mobile experience, artificially intelligent robots, self-driving cars, smart technological brain enhancement, genetic editing, etc.)

<http://www.trainingshare.com/fourth-industrial-revolution-video-clip-short.php>

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

<http://trainingshare.com/fourth-industrial-revolution-video-clip.php>
<http://www.tubechop.com/watch/92869981>

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."

July 11, 2017

The Rise of the Phigital Learner

Going 'phigital'? 4 things schools need to know about Generation Z, Todd Kominia, TrustEd

<https://trusteds12.com/phigital-digital-learning/>

May 15, 2017

3 must know's about the rising "phigital" student-and why their impact is enormous, Maris Stanbury, eCampus News

<https://www.ecampusnews.com/campus-administration/education-gap-i-what-student/>



**Clearly...
Learning is Changing!**



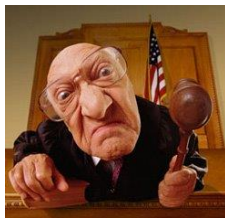
How Online Learning is Changing Classroom Design



Education 20/20



**From Instructor as Credit Manager
and Court Room Judge**



1. Instructor as Counselor



2. Instructor as Consultant**3. Instructor as Conductor****4. Instructor as Course Ambassador****5. Instructor as Curator****6. Instructor as Concierge****7. Instructor as Camping Trip Guide**

8. Instructor as Cultivator

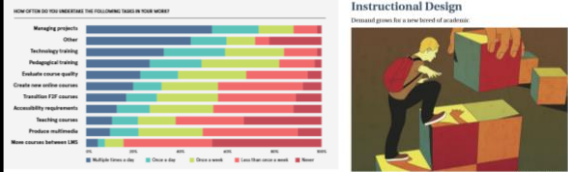


20 New Roles of the Instructor



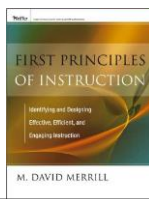
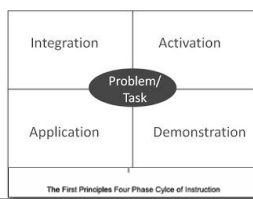
April, 2016 Instructional Design in Higher Education, Gates Foundation and Intentional Futures

http://intentionalfutures.com/reports/intentional_future/TheInstructionalDesignersWhoShapedTheFutureofEducation/5.20Report.pdf
http://intentionalfutures.com/reports/intentional_future/TheInstructionalDesignersWhoShapedTheFutureofEducation/5.20Report.pdf



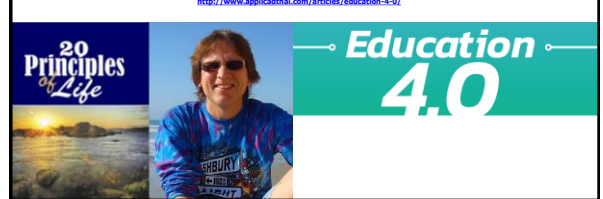
Merrill's First Principles of Teaching/Instruction

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



Bonk's Last Principles of Teaching/Instruction (Education 4.0?)

<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
<http://www.applied2014.com/articles/education-4-0/>



1. The Principle of Flexibility

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



2. The Principle of Convenience

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



3. The Principle of Collegiality

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



4. The Principle of Cheerfulness and Optimism

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



5. The Principle of High Expectations

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



6. The Principle of Choice and Options

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



7. The Principle of Empowerment and Autonomy

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



August 6, 2018 Why I'm Easy: On Giving Lots of A's

Gary Laderman, The Chronicle of Higher Education

<https://www.chronicle.com/article/Why-I-m-Easy-On-Giving-Lots-of-A's/244144>

August 5, 2017

Professor's plan to let students grade themselves gets an F, Paul LeBlanc, CNN

<http://www.cnn.com/2017/08/08/health/students-choose-grades-stress-reduction/index.html>

Professor's plan to let students grade themselves gets an F



THE CHRONICLE OF HIGHER EDUCATION



8. The Principle of Support and Feedback

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



9. The Principle of Spontaneity

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



10. The Principle of Organization

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



11. The Principle of Sharing

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



12. The Principle of Nontraditional Learning

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



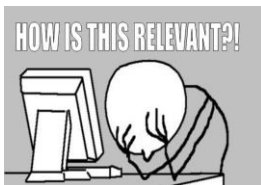
13. The Principle of Passion and Inspiration

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



14. The Principle of Relevance and Meaningfulness

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



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

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



16. The Principle of Expanded Resources

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



The World of Open Education



September 19, 2014

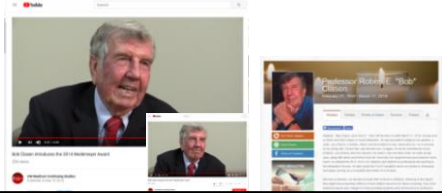
Story #1...I am a product of distance learning...

Bob Clasen, University of Wisconsin

https://www.youtube.com/watch?v=kCm1_MGaqec&feature=youtu.be

February 27, 1934-March 17, 2018

<https://www.crowdfunder.com/en/education/2018/01/Robert-Clasen/>



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.

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



17. The Principle of Human Connectedness

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



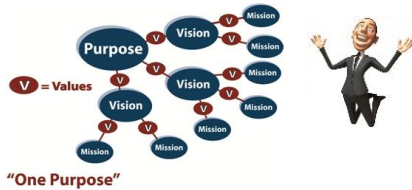
18. The Principle of Cognitive Apprenticeship

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



19. The Principle of Purpose and Vision

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



20. ??? (what is missing)

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



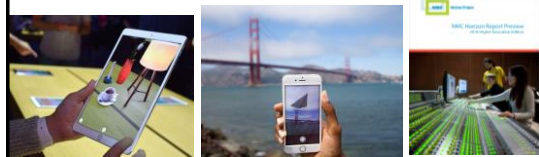
Bonk's 20 "Last" Principles of Instruction (LAST = Learning Activation System Template)

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



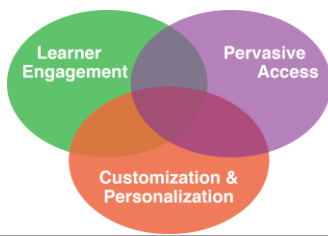
Thirty Ways Learning is Changing...

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

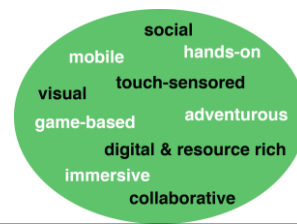


ARKit lets you create immersive augmented reality experiences on iOS devices. (Photo: Wearable)

30+ Ways Learning is Changing: The Mega Trends



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



January 3, 2018
Learning is More Mobile
CES 2018: Your guide to the biggest consumer electronics show USA Today

<https://www.usatoday.com/story/tech/news/2018/01/03/ces-2018-what-to-expect-what-to-buy/1088178802/>



The Octopus watch from Joy, an icon-based watch for kids to have good habits is on display during CES.



August 4, 2017
Learning is More Mobile
When our smartphones leave us out of touch Brett Molina, USA Today

<https://www.usatoday.com/story/tech/news/2017/08/04/when-our-smartphones-leave-us-out-of-touch/10452861/>



July 24, 2018
Learning is More Digital and Resource Rich
This Physicist Wants Female Scientists to Get Noticed. So She Wrote 270 Wikipedia Profiles.

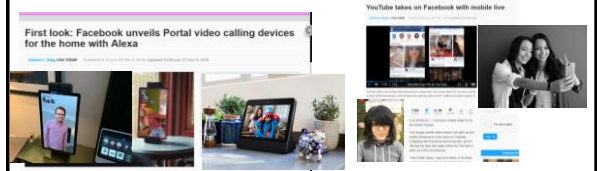
Jenna Amatulli, Huffington Post

https://www.huffpost.com/entry/scientist-goes-270-wikipedia-profiles-it-a-year-so-female-scientists-get-noticed_us_54574eeec9b0015a3a3c3d45



October 8, 2018
Learning is More Social
First look: Facebook unveils Portal video calling devices for the home with Alexa Edward C. Baig, The USA Today

<https://www.theverge.com/2018/10/8/18040000/facebook-portal-video-calling-devices>
<http://www.usatoday.com/story/tech/2017/04/07/youtube-takes-facebook-mobile-live/37564592/>



April 22, 2018
Learning is More Visual
Microsoft AI Commercial ft. Common

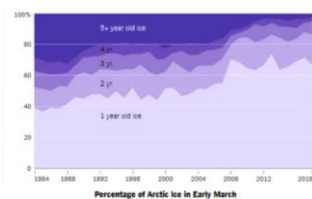
Video 1:00: Microsoft AI Commercial ft. Common <https://www.youtube.com/watch?v=9uac72ihb4/> (Feb 11, 2018)
 Video 1:48: Microsoft AI: Amplifying Human Ingenuity <https://www.youtube.com/watch?v=C3N0mU72NPP6>
 Video 1:00: Microsoft AI: Empowering Innovators ft. Common <https://www.youtube.com/watch?v=250Mg4XW> (April 22, 2018)

Video: 1:00 Microsoft AI + Common: Preserving History ft. Common: <https://www.youtube.com/watch?v=Z0ZjaTh4SM> (April 22, 2018)
 Video: 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common: <https://www.youtube.com/watch?v=7zoufzGHo> (April 22, 2018)



May 14, 2018 (Engagement)
Learning is More Adventurous
Aaron Doering, Chasing Seals, TEDx

<https://www.nytimes.com/interactive/2018/05/14/climate/arctic-sea-ice.html>
<http://chasingseals.com/>
<https://twitter.com/chasingseals>



August 8, 2017 Learning is More Game-like ShortSims

<http://www.shortsims.com/>
Clark Aldrich clark@clarkaldrichdesigns.com



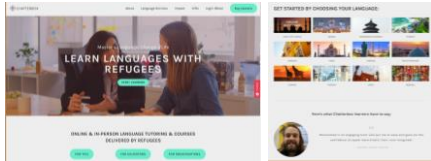
July 29, 2018 Learning is More Collaborative Why Silicon Valley is teaming up with San Quentin to train young people to code Jessica Guynn and Megan Diskin, USA TODAY

<https://www.usatoday.com/story/tech/2018/07/25/collaborative-why-silicon-valley-team-up-san-quentin-jessica-guynn/819123982/>
Video (1:40) <http://curtbank.com/san-quentin.html>



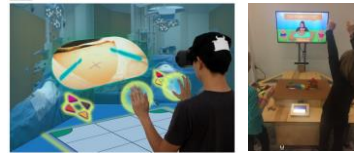
March 21, 2018 (Engagement) Learning is More Collaborative Chatterbox

The overall winner in the competition was **Chatterbox**, an online language school powered by refugees
<https://www.chatterbox.org/>



May 1, 2018 Learning is More Hands-on 3 ways districts can use AR and AI Justin Anglio, eSchool News

<https://www.eschoolnews.com/2018/05/01/3-ways-districts-can-use-ar-and-ai/>



EarthShake, the first educational game for the NoRILLA system, teaches early physics principles through hands-on learning.

May 1, 2018 Learning is More Immersive 3 ways districts can use AR and AI Justin Anglio, eSchool News

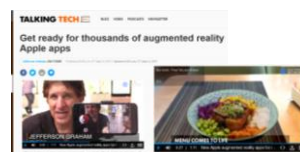
<https://www.eschoolnews.com/2018/05/01/3-ways-districts-can-use-ar-and-ai/>



When a teacher glances around her classroom, Lumilo allows her to see real-time analytics (in the form of icons) floating directly above each student's head. The teacher can glance directly at a student or "click" on a student's icon to see more detailed information about where and how that student might be struggling.

September 5, 2017 Learning is More Immersive Get ready for thousands of augmented reality Apple apps

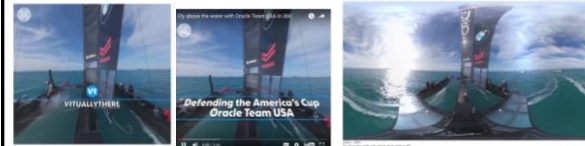
Jefferson Graham, The USA Today
AI Pets (.34): <http://curtbank.com/arkit.html>
Meal (30 seconds): <http://curtbank.com/arkit2.html>



The Food Network's app will be updated for AR in the new version of iOS11. (Photo: Food Network)

May 30, 2017
Learning is More Immersive
 Fly above the water with Oracle Team USA in 360

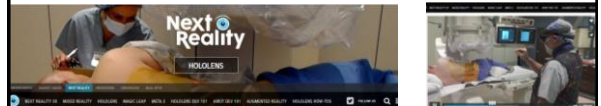
<https://www.oracle.com/usa/360/>
 The first 17 seconds: <http://curtbonk.com/sailing-37.html>
 1:14 to 1:54: <http://curtbonk.com/sailing-40.html>
 When video: <http://curtbonk.com/sailing-39.html>
 1:01: <http://curtbonk.com/sailing-101.html>



July 19, 2017
Learning is More Immersive
HoloLens Assists in Live Surgery
 Tommy Palladino, Next Reality

<https://hololens.reality.com/news/hololens-assists-live-surgery-0178887/>
 Video #1: 1:09: <http://curtbonk.com/hololens.html>
 Video #2: 1:37: <http://curtbonk.com/hololens2.html>

07/19/2017
 Hololens Assists in Live Surgery
 Numerous examples exist of doctors and surgeons using HoloLens to plan surgeries. The device has even been used to view reference images during a procedure and stream it to a remote audience. Until recently, it has not been used to augment the surgeon's view of the patient during a live surgery.
 Original Video: <https://hololens.reality.com/news/hololens-assists-live-surgery-0178887/>



May 18, 2017
Learning is More Immersive

Google Expeditions Adds Augmented Reality for Classrooms, Sri Ravipati, THE Journal
<https://thejournal.com/articles/2017/05/18/google-expeditions-adds-augmented-reality-for-classrooms.aspx>
<https://www.youtube.com/watch?v=DYdlaWTVg>
 27 seconds <http://curtbonk.com/thejournal27.html>
 38 Seconds <http://curtbonk.com/thejournal38.html>
 1: 10: <http://curtbonk.com/thejournal.html>

Google Expeditions Adds Augmented Reality for Classrooms

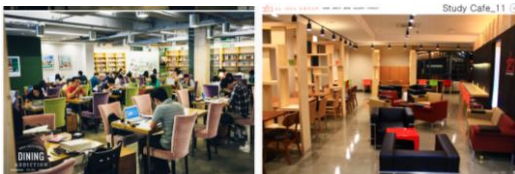


How Learning is Changing:
Mega Trend #2. Pervasive Access

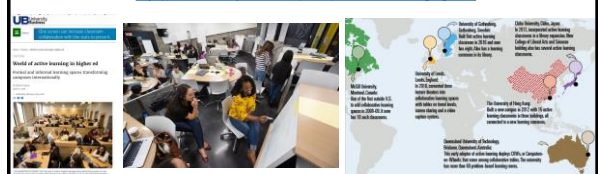


August 1, 2016 (Access)
Learning is More Ubiquitous
 363 by Idea Group; Study Café Meeting Place; Idea Space (Seoul, Korea)

http://363.co.kr/news/363_363-244
http://363.co.kr/wp/79w_wallerystudycafe_11



April 16, 2018
Learning is More Informal
 World of active learning in higher ed
 Formal and informal learning spaces transforming campuses internationally
 Sherrie Negrea, University Business, May 2018
<https://www.universitybusiness.com/article/world-active-learning-higher-ed>



May 7, 2014 (Access) Learning is More Global

CNA - Speaking Exchange (video chats)
<https://www.youtube.com/watch?v=S-5EfwvFOk>
 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.



July 11, 2018

Learning is More Immediate...

Fossil of first giant dinosaur, dubbed
Ingentia prima, found in Argentina
 Brett Molina, USA Today

<https://www.usatoday.com/story/news/science/2018/07/11/fossil-first-giant-dinosaur-discovered-argentina/774493001/>
<https://www.usatoday.com/story/news/science/2018/07/11/fossil-first-giant-dinosaur-discovered-argentina/774493001/>
 15 second: <http://curtbonk.com/ghostbusters15.html>



September 21 and November 12, 2017 Learning is More Immediate...

Scientists just discovered the first brainless animal that sleeps
Sara Kaplan, Washington Post

This ancient shark with a snake head and 300 teeth is why we should just say
 nope to the ocean
Cleve R. Woodson, Jr., Washington Post



A *Cassiopea* jellyfish rests upside-down on black sand and pulses, rhythmically contracting and relaxing its bell. At night, *Cassiopea* jellies pulse less frequently — a clue that they're sleeping, researchers report. (Photo by JanEaster.com)

November 19, 2015 (Access) Learning is More Immediate...

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

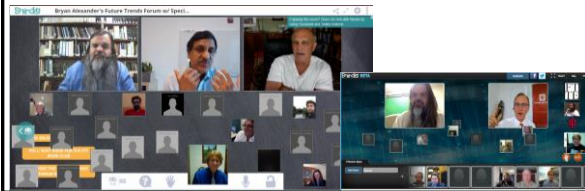
<http://www.usatoday.com/story/tech/science/2015/11/19/new-daddy-longlegs-named-after-lord-of-the-rings-character-smeagol/74337384/>



October 4, 2018 (Engagement) Learning is More Synchronous

Shindig, Future Trends Forum, Bryan Alexander
 Anant Agarwal, CEO and founder of edX

<https://bryanalexander.org/the-future-trends-forum/>
<http://www.shindig.com/>
<http://events.shindig.com/event/176-anniversary>
<https://shindig.com/client/client/7event=ftf-agarwal>



February 19, 2018

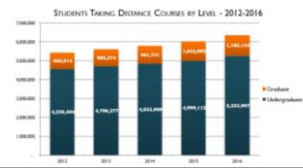
Learning is More Online (Access)

Grade Increase:

Tracking Distance Education in the United States

Joshua Kim, Inside Higher Ed

<http://onlinelearninginsider.com/joshua-kim-grades-increase/>
https://heapanalytics.com/data-form/5V_d9p1P1g20198V/
<http://www.educationnews.com/news/2018/02/19/grades-increase/>



March 19, 2018
Learning is More Free and Open
Open Textbook Network
 Center for Open Education, University of Minnesota
<http://research.cehd.umn.edu/otn/>

OER Adoptions on the Rise



Open Textbook Network
 WE ARE A COMMUNITY DEDICATED TO RESULTS

- 600+ Campuses represented
- \$8.5 Million Student savings by OTN members
- 45% of faculty who attend an OTN workshop adopt an open textbook

December 19, 2017 and April 24, 2018
Learning is More Free and Open
eTexts 101: A Practical Guide
<https://uap.umn.edu/texts101/front-matter/introduction/>
<https://uap.umn.edu/texts101/>

OER Adoptions on the Rise



OpenStax Saved 1 Million Students \$70 Million


Real cost savings for students participating in U's eTexts Program

| Category | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------|-----------|-------------|-------------|-------------|-------------|-------------|
| Surveyed | \$49,024 | \$38,238 | \$253,251 | \$335,237 | \$474,322 | \$514,905 |
| Not Surveyed | \$643,750 | \$1,405,048 | \$2,253,340 | \$2,259,102 | \$3,171,659 | \$4,438,669 |
| Total | \$692,774 | \$1,443,286 | \$2,506,591 | \$2,594,339 | \$3,645,981 | \$4,953,574 |

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>

THE CHRONICLE OF HIGHER EDUCATION

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



May 3, 2017
Learning is More Free and Open
4 out of 5 Companies Have Hired a Coding Bootcamp Graduate
 Sri Ravipati, Campus Technology



Resumes with "coding bootcamp" education experience

| Year | Number of Resumes |
|------|-------------------|
| 2012 | 0 |
| 2013 | 0 |
| 2014 | 0 |
| 2015 | 0 |
| 2016 | 100 |
| 2017 | 1000 |

August 9, 2017
Learning is More Free and Open
Modern State Education Alliance
<https://modernstates.org/>

Freshman Year For Free



New Venture Will Offer Free Courses That Students Can Take for College Credit

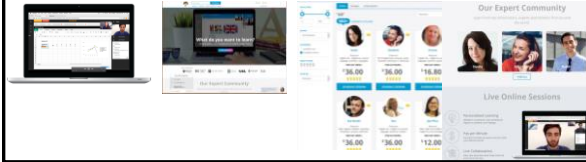
March 6, 2018
Learning is More Direct from Experts
 By connecting Chinese pupils with North American teachers, Beijing-based platform is building cultural bridges, one online English class at a time.
 Most Innovative Companies, Fast Company
 Interview with VIPKid CEO Cindy MI
<https://www.fastcompany.com/company/vipkid>



March 21, 2018 Learning is More Direct from Experts TeachMeNow

TeachMeNow is a gig-economy platform for teachers. This marketplace connects teachers, experts, and mentors to students. The technology combines scheduling, payments and live virtual sessions that can connect on any device allows tens of thousands of teachers to create their own online businesses, with some earning over \$100,000 last year. In addition, schools and companies including Microsoft use TeachMeNow software to create their own-branded online learning communities.

<https://teachmenow.com/>



September 25, 2017 Learning is More Direct from Experts Professors Have Taken Over the MOOCs: How open online learning is changing Joshua Kim, Inside Higher Ed

<https://www.insidehighered.com/blog/technology-and-learning/professors-have-taken-over-moocs>



How Learning is Changing: Mega Trend #3. Customization



February 16, 2017 (Customization) Learning is More Communal Building Global Community, Marc Zuckerberg, Facebook

<https://www.facebook.com/notes/mark-zuckerberg/building-global-community/1515350821158471/>



January 14, 2018 Facebook invites you to live in a bubble where you're always right Callum Borchers, The Washington Post

<https://www.washingtonpost.com/news/technology/wp/2018/01/14/facebook-online-gives-the-rise-to-a-bubble-where-youre-always-right.html>



May 12, 2017 (Customization) Learning is More Modifiable The Future of Collaboration Spaces Encompasses Video Interactive, Mobile, Julie Johnston, IU, Campus Technology

<https://campustechnology.com/2017/05/12/the-future-of-collaboration-spaces-encompasses-video-interactive-mobile-julie-johnston-iu/>



March 2, 2018
The Architecture of Ideal Learning Environments
 Emelina Minero, Edutopia

<https://www.edutopia.org/article/architecture-ideal-learning-environments>



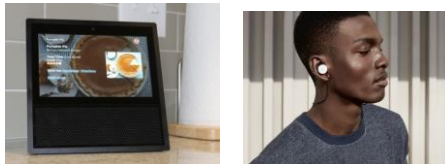
January 20, 2016
Learning is More Blended
 Universities tap growth of craft beer, offer classes, Chicago Tribune

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



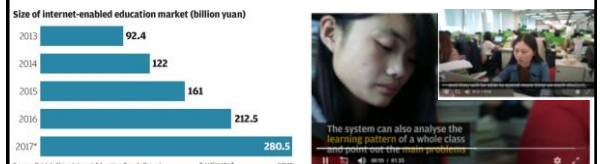
January 2, 2018
Learning is More Personal
 5G to AR: Here are 7 technologies to watch in 2018, Edward C. Baig, USA Today
 (e.g., Augmented hearing)

<https://www.usatoday.com/story/tech/2018/01/02/7-technologies-to-watch-in-2018-5g-ar-augmented-reality/4846600001/>



October 14, 2017
Learning is More Personalized
 China wants to bring artificial intelligence to its classrooms to boost its education system
 How the take off of AI-enabled education will affect the interaction between China's 14 million teachers and 188 million pupils
 Meng Jing, South China Morning Post

<https://www.scmp.com/tech/ai/article/2017/10/14/china-wants-to-bring-artificial-intelligence-to-classrooms>
 Video 1:33: <http://curtbonk.com/chinese-ai.html>



November 15, 2018
Learning is More Personalized
 TutorIT SAT Prep
 Joseph M. Scandura; scandura@gmail.com

Students can now practice an actual SAT of [collegeboard.org](https://www.collegeboard.org/sat). They also will get individualized help on items they miss, as long as they wish or until they get them all right. SATs generally cover very similar material from one year to the next. Students can continue with additional SATs until they reach their goal.



April 8, 2018
Learning is More Personal
 Can Artificial Intelligence Make Teaching More Personal?
 Goldie Blumenstyk, The Chronicle of Higher Education
<https://www.chronicle.com/article/Can-Artificial-Intelligence/243023>

Can Artificial Intelligence Make Teaching More Personal?



A new grading tool called **Gradescope** — powered by AI and now being used for more than 175,000 students at 550 colleges — offers one window on the possibilities. The tool helps automate the grading process without requiring instructors to rely on multiple-choice tests. Several professors who use it say the automation has actually made it easier for them to personalize their teaching. At the University of Michigan at Ann Arbor, students in a statistics class last fall had their writing assignments evaluated by an **automated text-analysis tool**.

May 9, 2017 (Customization) Learning is More On Demand (PDAs) 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/columnist/2017/05/05/amazon-echo-show-touchscreen-video-touchscreen/101468861/>
24 seconds: <http://curtbank.com/jetsona24.html>
44 seconds: <http://curtbank.com/jetsona44.html>

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

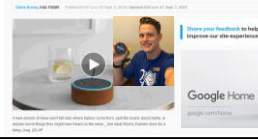


August 2, 2018 Hey, Alexa, Should We Bring Virtual Assistants to Campus? These Colleges Gave Them a Shot

Lindsey Ellis, The Chronicle of Higher Education

<https://www.chronicle.com/article/Hey-Alexa-Should-We-Bring-Virtual/244129>

Alexa goes to college: Echo Dots move into dorms on
campus



Hey, Alexa, Should We Bring Virtual
Assistants to Campus? These Colleges
Gave Them a Shot



January 9, 2017 Learning is More On Demand

Jill Watson, Round Three, Georgia Tech course prepares for third semester with virtual teaching
assistants, Jason Maderes, Georgia Tech News Center

The Terribly Thin Conception of Ethics in Digital Technology, David Golumbia, Uncomputing
<http://www.uncomputing.org/>

Bot teacher that impressed and fooled everyone, Donald Clark, Plan B
<http://donaldclarkplanb.blogspot.co.uk/2016/12/bot-teacher-that-impressed-and-fooled.html>



April 8, 2018 Learning is More On Demand What I Learned When My Students Used Google Translate

Diane Loyet, The Chronicle of Higher Education

<https://www.chronicle.com/article/What-I-Learned-When-My/243012>

- I was very surprised by the results. They sent me examples of translations into English from Albanian, Chinese, Kazakh, Russian, and Spanish. **The translations from Albanian, Kazakh, Russian, and Spanish were good. They were not perfect, but the mistakes were such that, had I encountered the sentences in a student paper, I would have attributed them to grammatical errors on the part of the non-native speaker of English.** Here is one of the Spanish examples:
- Original Spanish:** Si yo fuera tú, le cobrara hasta por respirar.
- Google Translate's English translation:** If I were you, I'll even charge you for breathing.
- Accurate translation:** If I were you, I would even charge him for breathing.



April 8, 2018 Learning is More On Demand What I Learned When My Students Used Google Translate

Diane Loyet, The Chronicle of Higher Education
<https://www.chronicle.com/article/What-I-Learned-When-My/243012>

- In contrast, Google Translate's English version of a Chinese passage was unintelligible:**
- But the second language acquisition is a steady process, if you take a cure to do, that is, chronic diseases and even health care, unlike acute disease, once the recipe to treatment, the consequences will soon be reflected.**



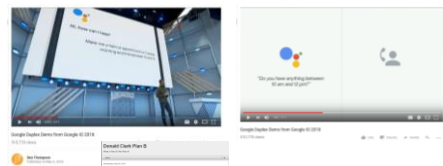
May 9, 2018 Learning is More On Demand Google Duplex Demo from Google IO 2018

Video (4:11): <https://www.youtube.com/watch?v=b6lMm2Fv98>

Video (2:05): <http://curtbank.com/google40-245.html>

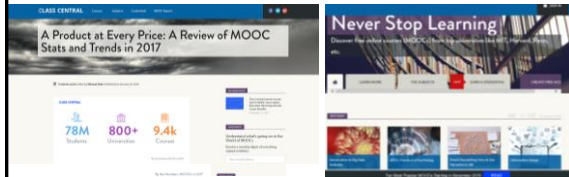
Entire video (4:11): <http://curtbank.com/google40-245.html>

<http://donaldclarkplanb.blogspot.ca/2018/05/google-just-announced-ai-bot-that-could.html?m=1>



January 22, 2018
Learning is More Massive
MOOCs for Credit
Class Central

<https://www.classcentral.com/news/news-for-credit/>



July 28, 2016 (Customization)
Learning is More Massive
Udemy: "Get cozy with a class"

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



September 26, 2018
The Future of Professional Credentialing
... in an Engagement Announcement
Joshua Kim, Inside Higher Ed

<https://www.insidehighered.com/digital-learning/article/2018/09/26/inside-higher-ed-joshua-kim>

The future bride graduated from the *University of Vermont* with a bachelor's degree in anthropology and is currently pursuing a master's degree in public health. She is employed as a care navigator with Apple.

The future groom graduated from *Worcester Polytechnic Institute* with a bachelor's degree in mechanical engineering and is currently pursuing a master's degree in mechanical engineering. He has been accepted in the *Harvard Business HBX CORe* program and plans to start in November. He is currently working as a technical program manager at Apple.

They are planning on a summer wedding in 2020.



April 20, 2015
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 Ngei. Mr. Ngei, who lives in Port Harcourt, Nigeria, has completed and passed 250.



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

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



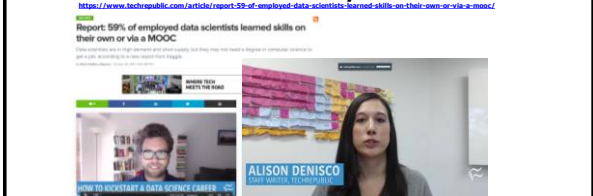
June 14, 2016 (Customization)
Chapter 15: Learning About MOOCs by Talking to Students
Charles Severance, Univ. of Michigan
Anuar Lequerica, Class Central
<https://www.class-central.com/report/dc-chuck-graduate-ceremony-python-specialization/>



World First: University of Michigan's Dr. Chuck Holds a Graduation Ceremony for MOOC Students

Programming for Everybody - Spring Graduation - 2016

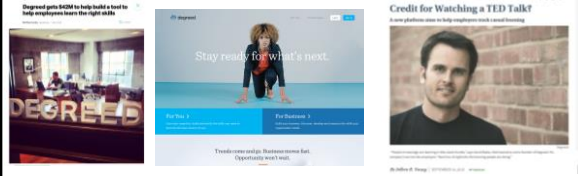
October 30, 2017
Learning is More Massive
Report: 59% of employed data scientists learned skills on their own or via a MOOC
Alison DeNisco Rayome
<https://www.techrepublic.com/article/report-59-of-employed-data-scientists-learned-skills-on-their-own-or-via-a-mooc/>



Report: 59% of employed data scientists learned skills on their own or via a MOOC

Alison DeNisco Rayome

March 6, 2018
Learning is More Competency-Based
Degreed gets \$42M to help build a tool to help employees learn the right skills
Matthew Lynley, TechCrunch
<https://techcrunch.com/2018/03/06/degreed-gets-42m-to-help-build-a-tool-to-help-employees-learn-the-right-skills/>




Degreed gets \$42M to help build a tool to help employees learn the right skills

Credit for Watching a TED Talk?

January 22, 2018
A Review of MOOCs Stats and Trends in 2017, Dhawal Shah, Class Central
<https://www.class-central.com/report/moocs-stats-and-trends-2017/>

Here is a list of the top five MOOC providers by registered users:

1. Coursera — 30 million users.
2. edX — 14 million users.
3. XuetangX — 9.3 million users.
4. FutureLearn — 7.1 million users.
5. Udacity — 5 million users.



Providers

Top 5 MOOC Providers

Coursera


October 12, 2018 (Customization)
Learning is More on Modular
edX Expands MicroMasters Programs With Data Science ("nanodegrees")
Digital Leadership and More, Sri Ravipati, Campus Technology
<https://campustechnology.com/2018/10/12/ed-expands-micromasters-programs-with-data-science-nanodegrees/>



edX Expands MicroMasters Programs With Data Science, Digital Leadership and More

Campus Technology

January 9, 2018
Learning is More on Modular
MIT launches MITx MicroMasters in Principles of Manufacturing, MIT Open Learning
<http://news.mit.edu/2018/mit-launches-new-mbx-micromasters-program-principles-manufacturing-0109>



MIT News

Udacity Unveils Nanodegree Program for Self-Driving Car Engineers

August 7, 2017

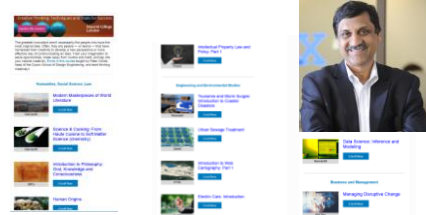
FutureLearn and Coventry University to Roll Out 50 Online Degrees (Last year Deakin University announced a similar partnership with FutureLearn)
Class Central, Dhawal Shah

<https://www.class-central.com/report/futurelearn-coventry-university-roll-50-online-degrees/>

| Degree | Provider | University | Cost |
|---|------------------------------|------------------------|---------|
| MS Computer Science | Udacity | Georgia Tech | \$6,600 |
| MS Analytics | edX | Georgia Tech | \$10k |
| MBA | Coursera | University of Illinois | \$22k |
| MS CS Data Science | Coursera | University of Illinois | \$19.2k |
| MS Accounting | Coursera | University of Illinois | \$27.2k |
| Masters in Innovation and Entrepreneurship | Coursera | HEC Paris | €20k |
| Cyber Security (Masters) | FutureLearnDeakin University | | £24k |
| Development and Humanitarian Action (Masters) | FutureLearnDeakin University | | £24k |
| Professional Practice: Information Technology (Masters) | FutureLearnDeakin University | | £24k |

Email inbox: June 10, 2018
edX (Summer discounts)

<https://www.edx.org/course>



Email inbox: June 11, 2018
Coursera
<https://www.coursera.org/>



MOOCs are Like Library Books...



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



WHAT'S NEXT

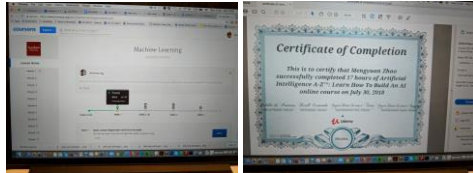


August 1, 2018

1. Independent Studies Via MOOCs

MOOC: AI A-Z: Learning How to Build an AI Online Course and Machine Learning

Mengyuan Zhao
<https://www.udacity.com/artificial-intelligence-a-z/>
<https://www.coursera.org/learn/machine-learning>

**October 12, 2018**

2. OER-Based Courses and Programs

The Chronicle of Higher Education
 Launching OER Degree Pathways:

An Early Snapshot of Achieving the Dream's OER Degree Initiative and Emerging Lessons
<https://www.achievethe.org/ai-dream-education/press-releases/achieving-the-dreams-oer-degree-initiative-and-emerging-lessons>
 Griffiths, R., Gardner, S., Lundh, P., Shear, L., Ball, A., Mislevy, J., Wang, S., Desrochers, D., Staisloff, R. (2018). *Participant Experiences and Financial Impacts: Findings from Year 2 of Achieving the Dream's OER Degree Initiative*. Menlo Park, CA: SRI International.

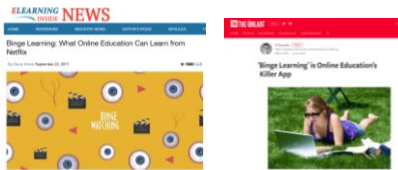


- Saving money with open-ed resources.
- A large-scale effort to encourage the use of open-ed resources has helped students save money and bolstered their learning, according to a report released today, on the findings from the second year of Achieving the Dream's OER Degree Initiative. The study found that:
 - Students saved between \$66 and \$122 per course.
 - Over 60 percent of students reported that the overall quality of their learning experience in an OER course was higher in comparison to a typical, non-OER course.
 - The number of OER courses at participating institutions jumped from 13 in 2016 to 385 in the spring of 2018; the number of students enrolled in OER courses went from 3,404 in 2016 to 37,398 in 2017.

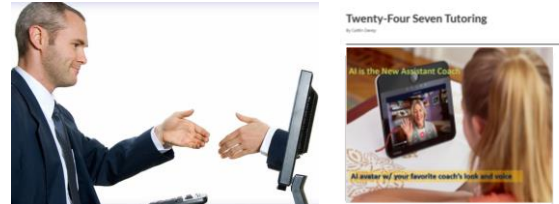
September 22, 2017

3. Binge Learning Experiences

What Online Education Can Learn from Netflix
 Henry Kronk, E-learning Inside News
<https://theumblast.com/binge-learning-is-online-education-a-killer-app-84da18f8ae76>



June 11, 2017 (New Learning Times) 7. Rise of Super E-Mentors and Coaches (Paul Kim, 2018)

**February 27, 2017**

5. Web Conferencing Walls

Global Learning Partner or PBL Team Selection Walls
https://www.thefuturemoon.com/53arcents/67thru/Library_Articles.htm

**September 26, 2018**

6. Interactive Agents and Tutors

Pushing the Boundaries of Learning With AI
 Lindsay McKenzie, Inside Higher Ed
<https://www.insidehighered.com/digital-learning/research/2018/09/26/interactive-agent-agent-use-at-higher-ed-machine-and-learning>
<https://www.jhu.edu/blog/research/2018/08/mandarin-language-ai/>
<https://www.youtube.com/watch?v=7EvdTus1R2A>
 1:17: <http://courtoon.com/mandarin.html>



January 30, 2017

7. Professor Einstein PDA's

<http://www.usatoday.com/story/tech/2017/01/28/robotic-bacita-now-serving-rally-fest/9588878/>

When the Teaching Assistant Is a Robot



Twenty-Four Seven Tutoring



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-bacita-now-serving-rally-fest/9588878/>

February 27, 2017

8. Robot Collaborators/Partners

http://www.thelearningmoon.com/43ancients/02files/Library_Alexandria.html



9. Café Classroom and Café Connectedness

Starbucks Your Classroom!

Oskar Cymerman, Teaching Channel
<https://www.teachingchannel.org/blog/2016/07/27/starbucks-your-classroom/>



Sterile, industrial-era rows aren't very attractive or motivating...I believe the "Starbucks" environment will promote that freedom and movement...Freedom is the key ingredient to social-emotional well-being and deeper learning. Rows and columns constrict. They hold and stifle.

10. Instructional Designer Morphs into Learning Environment Engineer

The New and Improved Instructional Designer



February 27, 2017

11. World Knowledge Refreshment Stations

http://www.thelearningmoon.com/43ancients/02files/Library_Alexandria.html



June 3, 2016

12. Explosion of Virtual Reality

VR 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

How can we make it so that the average high school senior can

experience the feeling of being 74?

Check out this video from the University of Michigan Medical School.

It's a VR experience that lets students experience what it's like to be 74.

Check out this video from the University of Michigan Medical School.

It's a VR experience that lets students experience what it's like to be 74.

Check out this video from the University of Michigan Medical School.

It's a VR experience that lets students experience what it's like to be 74.

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It's a VR experience that lets students experience what it's like to be 74.

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

Poll: Excited or does all this give you a headache?



We are entering a jumping off point...

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



Things are heating up!

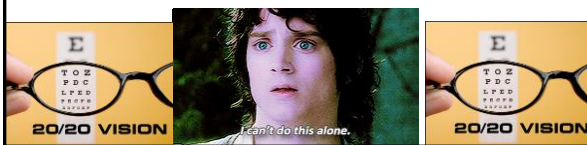


The Learning Revolution is coming within reach!



Remember...
"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: cjbonk@indiana.edu

