

Education 20/20 Meets Education 4.0: Visions of Our Changing Learning World!

Curtis J. Bonk, Professor, Indiana University

cjbok@indiana.edu

<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-will-emerge-75-million-may-be-lost/?hpid=hp_hp-top-table-main-machine-jobs%3Ahomepage%2Fstory&hpid=hp_hp-top-table-main-machine-jobs%3Ahomepage%2Fstory

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



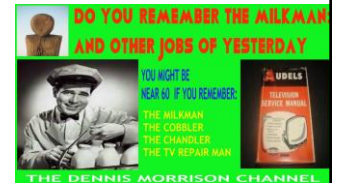
March 29, 2017**Every industrial robot takes up to 6 jobs, study finds**

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/What-a-Lowly-a-Degree-Is/23864>

'Those Jobs Are Gone'

**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/5283/reader-rabbit-the-boring-educational-game-company-that-ruled-the-world>
<https://www.youtube.com/watch?v=H0ASB3U4>

**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-impact-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)

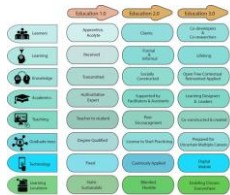
Education 3.0 The Genesis and Emergence of Education 3.0 in Higher Education and its Potential for Africa

First Monday, by Derek Keats and J. Philipp Schmidt, March 2007
<http://firstmonday.org/ojs/index.php/fm/article/view/1625/1540>

EDUCATION 3.0

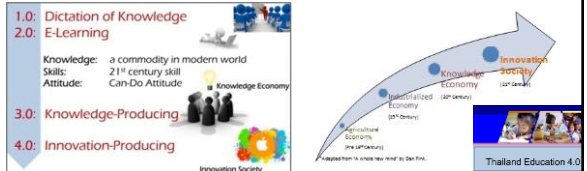
Characteristics	Education 1.0	Education 2.0	Education 3.0
Primary role of professor	Source of knowledge	Guide and source of knowledge	Orchestrator of collaborative knowledge creation
Content arrangements	Traditional copyright materials	Copyright and freespaces educational resources for students within disciplines, sometimes across institutions	Free/open educational resources created and shared 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

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



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/enadmission/education4.html> (Chula Engineering)



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

(Paul Kim, Taiwan, November 2018)

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)

CREATIVITY, INC.

The Zig Zag creativity card deck!

Elizabeth Gilbert

BIG MAGIC

Ken Robinson

Pinkest 2.

Advice from Adam Grant: Look for "disagreeable givers"

How schools kill creativity

Creative Schools

Originals

Keith Sawyer

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/>
(big data, mobile supercomputing, artificially intelligent robots, self-driving cars, more technological brain enhancements, genetic editing, etc.)

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

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/8280981>

The world is really open to learning

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."

CHINA & INDIA **AI/AN** **TECHNOLOGY** **EDUCATION** **SINGAPORE**

July 11, 2017

The Rise of the Phigital Learner

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

<http://trustedk12.com/phigital-digital-learning/>

May 15, 2017

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

<https://www.ecampusnews.com/online-education/education-gone-phigital-what/>

Going 'phigital'? 4 things schools need to know about Generation Z

3 must know's about the rising "phigital" student-and why their impact is enormous

Why education must adapt: how to accommodate to the growing student generation - Real Tech?

Clearly... Learning is Changing!



How Online Learning is
Changing Classroom Design



Education 20/20



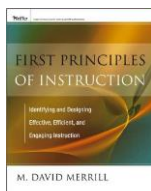
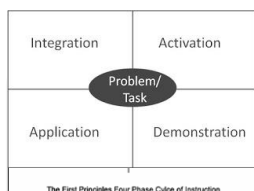
20 New Roles of the Instructor

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



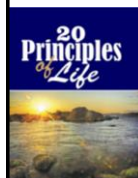
Merrill's First Principles of Teaching/Instruction

<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.apnicad2016.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://travelledman.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

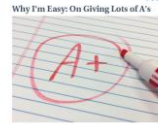
Professor's plan to let students grade themselves gets an F, Paul LeBlanc, CNN

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



9. The Principle of Spontaneity

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



10. The Principle of Organization

<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>



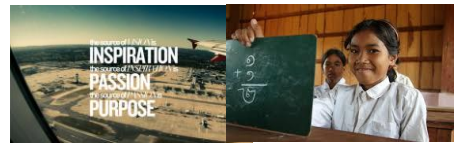
12. The Principle of Nontraditional Learning

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



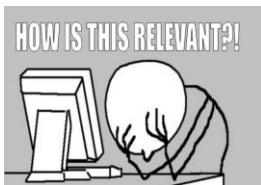
13. The Principle of Passion and Inspiration

<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 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




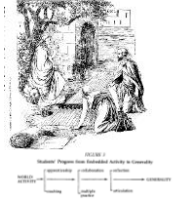

17. The Principle of Human Connectedness

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



"One Purpose"

20. ??? (what is missing)

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



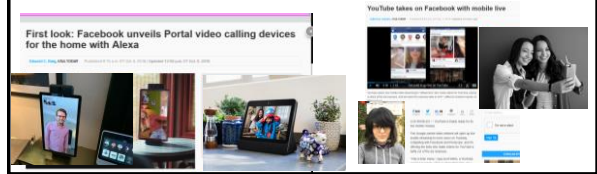
August 4, 2017
Learning is More Mobile
 When our smartphones leave us out of touch
 Brett Molina, USA Today

<http://www.usatoday.com/story/tech/news/2017/08/04/smartphone-addiction-linked-to-parenting-we-ask/518953801/>



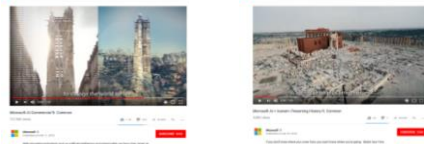
October 8, 2018
Learning is More Social
 First look: Facebook unveils Portal video calling devices for the home with Alexa
 Edward C. Baig, The USA Today

<https://www.theverge.com/2018/10/8/18119842/facebook-portal-video-calling-devices-alexa>
 Video (1 minute) <http://curtbonk.com/facebook-portal.html>
<http://www.usatoday.com/story/tech/2017/02/07/youtube-takes-facebook-mobile-live/97566592/>



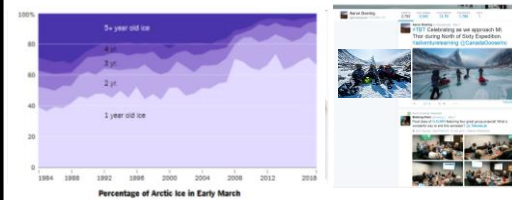
April 22, 2018
Learning is More Visual
 Microsoft AI Commercial ft. Common

Video 1:00: Microsoft AI Commercial ft. Common: <https://www.youtube.com/watch?v=9ucY723h0e4> (Feb 11, 2018)
 Video 1:46: Microsoft AI: Amplifying Human Ingenuity: <https://www.youtube.com/watch?v=r02mu725Wp0>
 Video 1:00: Microsoft AI: Empowering Innovators ft. Common: <https://www.youtube.com/watch?v=250WadATWw> (April 22, 2018)
 Video 1:50: Microsoft AI + Xconomy: Preserving History ft. Common: <https://www.youtube.com/watch?v=ZD2ja3tHMSM> (April 22, 2018)
 Video 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common: <https://www.youtube.com/watch?v=7r9afGt8t0e> (April 22, 2018)



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

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



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 Gynn and Megan Diskin, USA TODAY

<https://www.usatoday.com/story/tech/2018/07/25/california-youth-learning-code-prison-help-san-quentin/181822092/>
 Video (1:40) <http://curtbonk.com/san-quentin.html>



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



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.

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 Ravipti, THE Journal

<https://thejournal.com/articles/2017/05/18/google-expeditions-adds-augmented-reality-for-classrooms.aspx>

<https://www.youtube.com/watch?v=OYdJmWTYg>

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

May 18, 2017



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/wn/79w_gallery?study-cafe_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-5EfvvFOk>
 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...

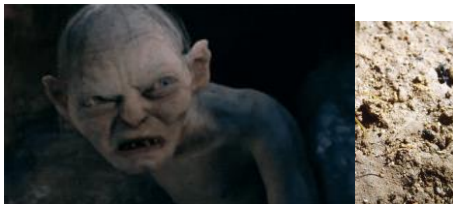
Fossil of first giant dinosaur, dubbed
Ingentia prima, found in Argentina
 Brett Molina, USA Today

<https://www.usatoday.com/story/tech/science/2018/07/11/fossil-first-giant-dinosaur-discovered-argentina/774493002/>
<https://www.usatoday.com/story/tech/science/2018/07/11/fossil-first-giant-dinosaur-discovered-argentina/774493002/>
 15 second: <http://curtbonk.com/ghostbusters15.html>



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/79031000/>



October 4, 2018 (Engagement)

Learning is More Synchronous

Shindig, Future Trends Forum, Bryan Alexander

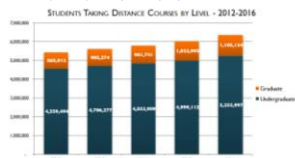
Anant Agarwal, CEO and founder of edX
<https://bryanalexander.org/the-future-trends-forum/>
<http://www.shindig.com/>
<https://events.shindig.com/event/ftf-anniversary>
<https://shindig.com/client/client/?event=ftf-agarwal>



February 19, 2018 Learning is More Online (Access)

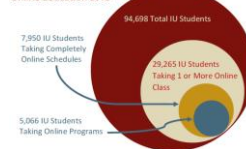
Grade Increase:
 Tracking Distance Education in the United
 States

Joshua Kim, Inside Higher Ed
<https://www.insidehighered.com/distance-learning/article/2018/02/19/tracking-distance-education-united-states>



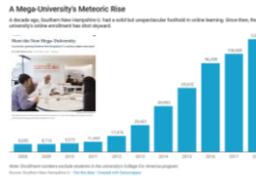
November 1, 2017 Learning is More Online (Access) Indiana University, Office of Online Education

Fall 2017
 Online Education at IU



*Starting in fall 2007, ACP students are excluded from counts.

November 11, 2018
Meet the New Mega-University:
Can the fast-growing Southern New
Hampshire U. transform higher education?
Goldie Blumenstyk, The Chronicle of Higher Education
<https://www.chronicle.com/article/Meet-the-New-Mega-University/44548>



July 29, 2018
Learning is More Online
Can a Huge Online College Solve California's Work-
Force Problems?

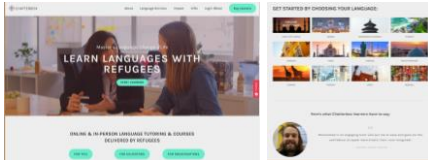
Karin Fischer, *The Chronicle of Higher Education*
<https://www.chronicle.com/article/Can-a-Huge-Online-College/244054>
<http://curtbonk.com/link>

Can a Huge Online College Solve California's Work-Force Problems?



The new college is being created to help California's adults improve their job prospects in growing fields like IT support.

March 21, 2018 (Engagement)
Learning is More Global
Chatterbox
 The overall winner in the competition was **Chatterbox**, an online language school powered by refugees
<https://www.chatterbox.org/>



September 17, 2018
Talk to Books

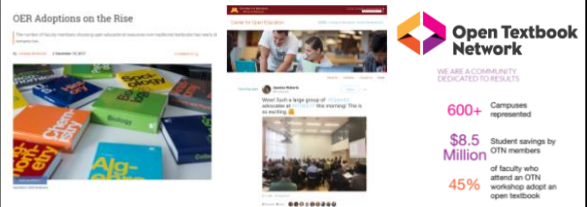
<https://books.google.com/talktobooks/>
<https://www.youtube.com/watch?v=12528664/talk-to-books-at-1st-2018-roy-horwath-univille-google-ai-outstanding-new-search-tool-will-answer-any-question-by-reading-thousands-of-books/>



August 2, 2018
Learning is More Free and Open
OpenStax Infographic
https://csh-uc-rt.wpmucdn.com/news-network.rice.edu/files/2018/07/infographic-2018_email-21d0wms.pdf



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



December 19, 2017 and April 24, 2018 Learning is More Free and Open

eTexts 101: A Practical Guide

<https://the.ohr.unh.edu/contacts/101-front-matter/introduction/>

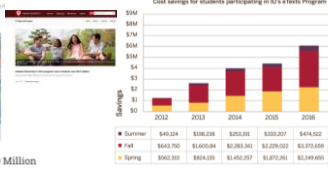
<https://the.ohr.unh.edu/contacts/101/>

OER Adoptions on the Rise



OpenStax Saved 1 Million Students \$70 Million

By [Chris Latham](#) - 27 August 2017



Total cost savings for students participating in MIT's eTexts Program

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.

By [Robert D. Hoover](#) - 10/10/2015



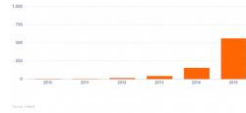
May 3, 2017 Learning is More Free and Open 4 out of 5 Companies Have Hired a Coding Bootcamp Graduate Sri Ravipati, Campus Technology

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



Resumes with "coding bootcamp" education experience

The LinkedIn resumes on Indeed



leed

August 9, 2017 Learning is More Free and Open Modern State Education Alliance

<https://modernstates.org/>



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

By [Gordon Thompson](#) - 1/23/2017

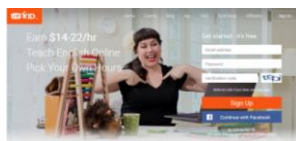
March 6, 2018 Learning is More Direct from Experts

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>



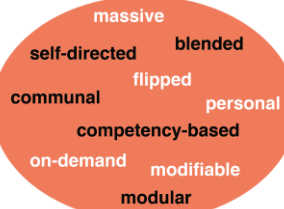
March 21, 2018 Learning is More Direct from Experts TeachMeNow

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 across time 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/>

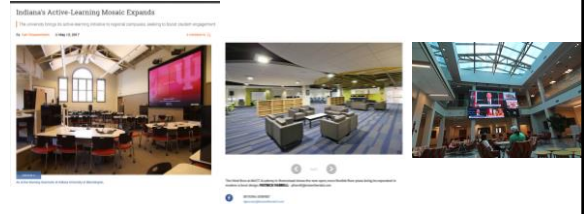


How Learning is Changing: Mega Trend #3. Customization



May 12, 2017 (Customization) Learning is More Modifiable

The Future of Collaboration Spaces Encompasses Video Interactive, Mobile, Julie Johnston, IU, Campus Technology



March 2, 2018 The Architecture of Ideal Learning Environments

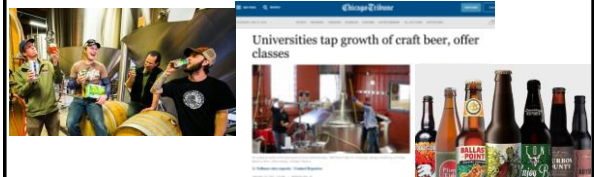
Emelina Minero, Edutopia

<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/story/news/education/2016/01/20/universities-tap-growth-of-craft-beer-offer-classes/78961220027>



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

Video 1:33: <http://curtbook.com/chinese-ai.html>

Size of internet-enabled education market (billion yuan)



November 15, 2018 Learning is More Personalized TutorIT SAT Prep

Joseph M. Scandura; scandura0@gmail.com

Students can now practice on actual SATs at www.tutorit.com. They also will get 100% feedback help on items they miss, as long as they work or until they get them all right. SATs generally come 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/243923>

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/news/2017/05/09/amazon-echo-show-touchscreen-video-alexa/101448864/>
 24 seconds: <http://courtbomb.com/jetsons24.html>
 44 seconds: <http://courtbomb.com/jetsons44.html>

**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/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 Maderer, 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://donaldclarkb.blogspot.co.uk/2015/11/2bot-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/243017>

- 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, Chinese, 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/243017>

- 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=bd1mEm2Fy08>

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

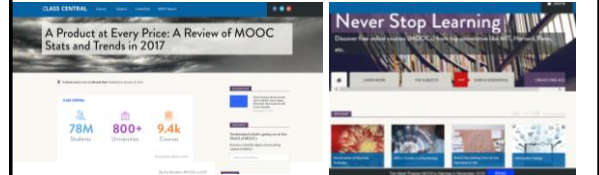
From video 4:11: <http://donaldclarkplanb.blogspot.ca/2018/05/google-jail-announced-at-bot-that-could.html?m=1>

Donald Clark Plan B



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

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



July 28, 2016 (Customization)
Learning is More Massive
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)

Chapter 15: Learning About MOOCs by Talking to Students

Charles Severance, Univ. of Michigan
 Anuar Lequerica, Class Central

<https://www.class-central.com/report/dr-chuck-graduation-ceremony-python-specialization/>

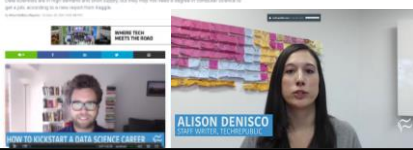


October 30, 2017**Learning is More Massive**

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

<https://www.techcrunch.com/2017/10/30/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

**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/>

**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/edx-expands-micromasters-with-data-science-digital-leadership-and-more.aspx>

Lindsay McKenzie, Inside Higher Ed

<https://www.insidehighered.com/news/2018/10/12/edx-expands-micromasters-with-data-science-digital-leadership-and-more.aspx>

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

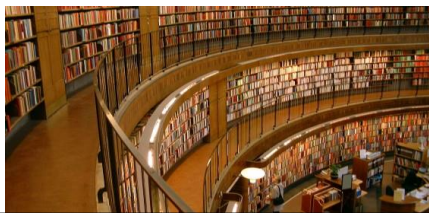
By Sri Ravipati 10/12/18

**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



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!

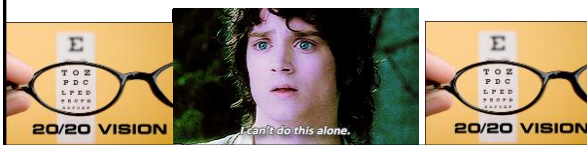


The Learning Revolution is coming within reach!



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

