Technology Today, Technology Tomorrow: Might Learning Evolutions lead to Learning Revolutions?

Curtis J. Bonk, Professor, Indiana University
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http://curtbonk.com/

How will you engage the digital learners in the content and process of learning?

Talk Overview

1. **Technology Yesterday**
2. **Technology Today**
   30 ways learning is changing...
Megatrends of Learning:
   a. **Engagement**
   b. **Access, and**
   c. **Customization**
3. **Technology Tomorrow and Future Trends**

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.

Part 1: Technology Yesterday

Poll: Remember Education 1.0

1728: 1st correspondence course advertised Boston
(learn shorthand from Caleb Phillips thru weekly mailed lessons)
The First University Correspondence Course
(University of London, External Program, 1858)
1728-1990s – Generally postal system based

Fall 2014, On Wisconsin
MOOC, Meet MORC (Massive Open Radio Course)
WHA, UW Madison, College of the Air,1933,
Vocational Training dedicated to Agriculture,
and later Home Economics and Typing

MOOC, Meet MORC

Mimeograph machine.

Winky Dink and … Bill Gates?,
Bob Greene, March 31, 2013, CNN
http://www.cnn.com/2013/03/31/opinion/greene-winky-dink-bill-gates/index.html?hpt=hp_t3

A girls uses her "Winky Dink" drawing kit to draw on
a TV screen as they watch the 1950s kids program.

June 3, 2017
How PLATO changed the World…in 1960
Cait Etherington, ElearningInside News
https://news.elearninginside.com/how-plato-changed-the-world-in-1960/
PLATO was the first generalized computer-assisted instruction system. Starting in 1960, it ran on the University of Illinois' ILLIAC I computer. By the late 1970s, it supported several thousand graphics terminals distributed worldwide, running on nearly a dozen different networked mainframe computers. Many modern concepts in multi-user computing were originally developed on PLATO, including forums, message boards, online testing, e-mail, chat rooms, picture languages, instant messaging, remote screen sharing, and multiplayer games.

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
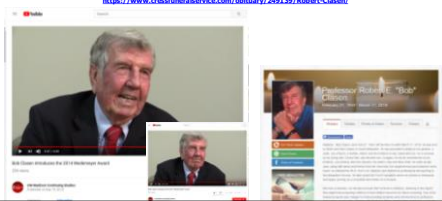**Engelbart's sketches.**

The World of Open Education

September 19, 2014
A Distance Learning Story
Bob Clasen, University of Wisconsin
https://www.youtube.com/watch?v=kCm1_MGagec&feature=youtu.be
February 27, 1934-March 17, 2018
https://www.crossfuneralservice.com/obituary/249139/Robert-Clasen/
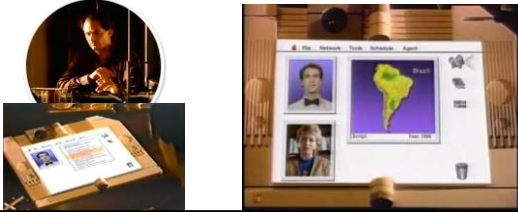

September 26, 2018
Remember Education 2.0?
The rise and fall of the company behind 'Reader Rabbit'
and all your favorite educational games
Abigail Cain, The Outline
https://theoutline.com/post/6293/reader-rabbit-history-the-learning-company-xsomblink-carmen-sandiego?zd=1&zi=gmbuobk7
Rocky's Boots: https://www.youtube.com/watch?v=a-NLh58bIIk
Project YES (Curt Bonk): https://youtu.be/bZD5mQH4Ups

Knowledge Navigator (1987)
Apple Computer
http://www.youtube.com/watch?v=hb4AzF6wEoc

August 6, 2016
The Web is 25!
Happy (sort of) birthday, World Wide Web!,
Erica Fink and Jonathan Tortora, CNN Money (Tech)
http://info.cern.ch/ (First website)
http://info.cern.ch/hypertext/WWW/TheProject.html
http://money.cnn.com/2016/08/06/technology/world-wide-web-25-years-old/index.html?iid=hp-stack-dom

THE WORLD WIDE WEB
BEGINS ON MARCH 12, 1989

January 15, 2016
Wikipedia is 15!
Scott McLemee, Inside Higher Ed

April 4, 2016
MIT OpenCourseWare is 15!
http://ocw.mit.edu/about/15-years/
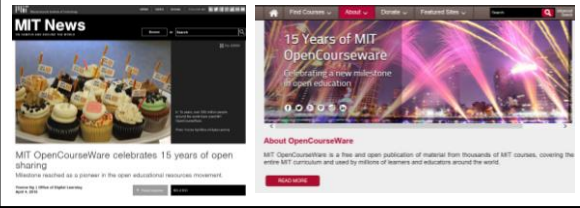
The Creation of Effective Learning Environments
http://study.com/academy/lesson/learning-environment-in-the-classroom-definition-impact-importance.html

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.

3

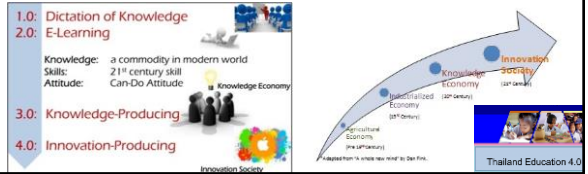## Education 3.0...Education 20/20

E D U C A T I O N 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

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

3.0: Knowledge-Producing
4.0: Innovation-Producing

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

(Paul Kim, Taiwan, November 2018)

Create a New Question
Question
What is turbulence?

What is turbulence?

Answer:
Turbulence or turbulent flow is any pattern of fluid motion characterized by chaotic changes in pressure and flow velocity.

Level1 question; 99.999118% confidence
Show evaluation metric
Disagree? Submit your evaluation below
Level 1 Level 2 Level 3 Level 4 Level 5

Create a New Question
Question
Why is turbulence dangerous to small airplanes?

Why is turbulence dangerous to small airplanes?

Answer:
Wake turbulence is exacerbated by a pair of vortices that spin from the wingtips. The vortices are mostly created when a plane is flying slow and the wings are working hardest to produce lift.

The bigger the plane, the bigger the wakes. The most virulent wakes leave smaller planes more vulnerable should they run into one.

Level4 question; 99.999888% confidence
Show evaluation metric
Disagree? Submit your evaluation below
Level 1 Level 2 Level 3 Level 4 Level 5

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)

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-evolution-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

The Fourth Industrial Revolution
Klaus Schwab

April 13, 2016
The Fourth Industrial Revolution:
What it means, how to respond
Klaus Schwab, Founder and Executive Chairman, World Economic Forum
https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/
http://trainingshare.com/fourth-industrial-evolution-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."

July 11, 2017
The Rise of the Phigital Learner
Going 'phigital?' 4 things schools need to know about
Generation Z, Todd Kominiak, 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/campus-administration/education-gen-z-phigital-student/

Clearly…
Learning is Changing!

How Online Learning is Changing Classroom Design

Education 20/20

VISION 20/20
Fulfilling the Promise of Public Education

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20 New Roles of the Instructor

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

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

http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
http://www.applicadthai.com/articles/education-4-0/

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

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

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

Technology Today:
Thirty Ways Learning is Changing...
(i.e., it's more informal, video-based, ubiquitous, collaborative, self-directed, global, mobile, open, massive, etc.)
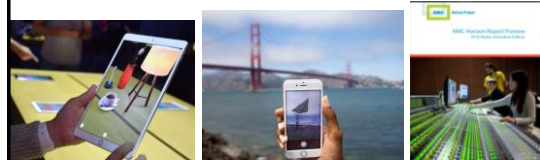
ARKit lets you create immersive augmented reality experiences on iOS devices. (Photo: Wareable)

90+ ED TECH COMPANIES WRITING THE FUTURE OF EDUCATION

October 21, 2018
Virtually Inspired (from Drexel University)
Building a Go-to Resource on Innovation in Online Learning
Meg Lloyd, Campus Technology
https://campustechnology.com/articles/2018/10/24/building-a-go-to-resource-on-innovation-in-online-learning.aspx
https://virtuallyinspired.org/

6

30+ Ways Learning is Changing:
The Mega Trends

Learner Engagement

Pervasive Access

Customization & Personalization

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

social
hands-on
mobile
touch-sensored
visual
game-based
adventurous
digital & resource rich
immersive
collaborative

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.theatlantic.com/science/archive/2018/11/what-happened-after-people-first-arrived-americas/575335/
Video (1 minute): **http://curtbonk.com/facebook-portal.html**
http://www.usatoday.com/story/tech/2017/02/07/youtube-takes-facebook-mobile-live/97566592/

First look: Facebook unveils Portal video calling devices for the home with Alexa

YouTube takes on Facebook with mobile live

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://wearechatterbox.org/

LEARN LANGUAGES WITH REFUGEES

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.huffingtonpost.com/entry/scientist-pens-270-wikipedia-pages-in-a-year-so-female-scientists-get-noticed_us_5b574aeee4b0b15aba92c0d5

This Physicist Wants Female Scientists To Get Noticed. So She Wrote 270 Wikipedia Profiles.

April 22, 2018
Learning is More Visual
Microsoft AI Commercial ft. Common
Video 1:00: Microsoft AI Commercial ft: https://www.youtube.com/watch?v=9tucY7Jhhs4 / (Feb 11, 2018)
Video 1:48: Microsoft AI: Amplifying Human Ingenuity: https://www.youtube.com/watch?v=NDmu7Z5NPXo
Video 1:00: Microsoft AI: Empowering Innovators ft. Common: https://www.youtube.com/watch?v=z5OWdqfAYIw (April 22, 2018)
Video: 1:00 Microsoft AI + Iconem: Preserving History ft. Common:
https://www.youtube.com/watch?v=ZDZjaIhzMSM (April 22, 2018)
Video: 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common:
https://www.youtube.com/watch?v=7rzufxIGH4o (April 22, 2018)

Slide 1

April 8, 2018
Learning is More Immersive
Pros and Cons of Virtual Reality in the Classroom
Adam Evans, The Chronicle of Higher Education
https://www.chronicle.com/article/ProsCons-of-Virtual/243016?cid=cp197

Pros and Cons of Virtual Reality in the Classroom

Pro:
An art professor might virtually guide students in his rural-Kentucky classroom through an exhibit happening in Paris, allowing them not only to explore works of art but also to virtually hold and examine them up close. A biology class might virtually travel down DNA strands previously visible only through a microscope.

Con:
We need to be having conversations about the ethics of using virtual reality in the classroom. Just because we have the ability to virtually transport a student to a war-torn country or a historical moment in time does not mean we should do so without thinking of possible consequences. What ethical obligations might faculty members owe our students during these experiences?

Slide 2

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

informal
global
free
video-based
open
synchronous
ubiquitous
direct from experts
online
immediate

Slide 3

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

Slide 4

May 7, 2014 (Access)
Learning is More Global
CNA - Speaking Exchange (video chats)
https://www.youtube.com/watch?v=-S-5EFwpFOk
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.

Slide 5

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/2018/07/11/fossil-first-giant-dinosaur-discovered-argentina/774493002/
https://www.usatoday.com/story/news/2017/05/09/new-species-dinosaur-zuul-ghostbusters/101475468/
15 second: http://curtbonk.com/ghostbusters15.html

Slide 6

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/ftf-anniversary
https://shindig.com/client/client/?event=ftf-agarwal

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/245048
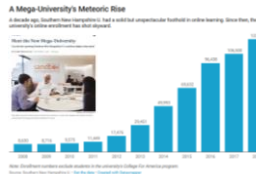
July 29, 2018
Learning is More Online
Can a Huge Online College Solve California's Work-Force Problems?
Karin Fischer, The Chronicle of Higher Education
https://www.chronicle.com/article/Can-a-Huge-Online-College/244054
http://curtbonk.com/link

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

September 17, 2018
Talk to Books
https://books.google.com/talktobooks/
https://qz.com/1252664/talk-to-books-at-ted-2018-ray-kurzweil-unveils-googles-astounding-new-search-tool-will-answer-any-question-by-reading-thousands-of-books/

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

August 2, 2018
Learning is More Free and Open
OpenStax Infographic
https://cpb-us-e1.wpmucdn.com/news-network.rice.edu/dist/c/2/files/2018/07/infographic_2018_final-21jj6wm.pdf

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/

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

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 Goldie Blumenstyk | AUGUST 09, 2017

The World is Open:
How Web Technology Is Revolutioning Education
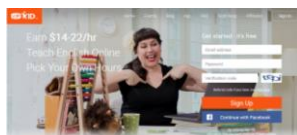
TEN OPENERS: (WE-ALL-LEARN)

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

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 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/

11

How Learning is Changing:
Mega Trend #3. Customization

massive

blended

self-directed

flipped

communal

personal

competency-based

on-demand

modifiable

modular

January 14, 2018
Learning is More Communal
Facebook invites you to live in a bubble where you're always right
Callum Borchers, The Washington Post
https://www.thestar.com/news/world/2018/01/14/facebook-invites-you-to-live-in-a-bubble-where-youre-always-right.html

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March 2, 2018
Learning is More Modifiable
The Architecture of Ideal Learning Environments
Emelina Minero, Edutopia
https://www.edutopia.org/article/architecture-ideal-learning-environments

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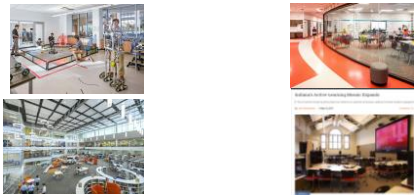
January 20, 2016
Learning is More Blended
Universities tap growth of craft beer, offer classes, Chicago Tribune
http://www.chicagotribune.com/business/ct-college-craft-beer-offer-classes-20160120-story.html

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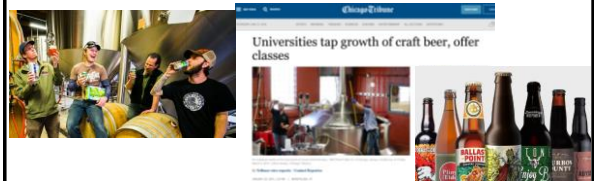
February 27, 2017
Learning is More Self-Directed
The LMS Market is Quickly Losing Ground
Carol Leaman, CLO
https://www.openlearning.com/
https://www.openlearning.com/
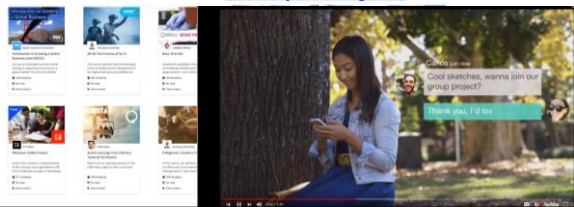
January 2, 2018
Learning is More Personal
5G to AR: Here are 7 technologies to watch in 2018, Edward C. Baig, USA Today
https://www.usatoday.com/story/tech/news/2018/01/02/artificial-intelligence-and-world-overblown-fears/985813001/
(e.g., Augmented hearing)
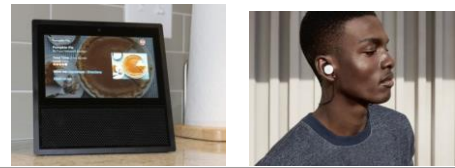
March 14, 2016
Learning is More Personal
Artificial Intelligence and Robots
Paul Basken, The Chronicle of Higher Education
https://www.chronicle.com/article/Behind-a-Computer-s-Surprise/235687
http://www.usatoday.com/story/tech/2016/03/13/robots-androids-geminoids-sxsw/81735092

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

AlphaGo

Forget the robots — here come the geminoids!

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/science-research/article/2115271/china-wants-bring-artificial-intelligence-its-classrooms-boost
Video 1:33: http://curtbonk.com/chinese-ai.html

Size of internet-enabled education market (billion yuan)
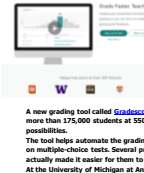
Year	Value
2013	92.4
2014	122
2015	161
2016	212.5
2017*	280.5

The system can also analyse the learning pattern of a whole class and point out the main problems

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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?

Grade Faster. Teach Better.

How U of Michigan Built Automated Essay-Scoring Software to Fill 'Feedback Gap' for Student Writing

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.

By Goldie Blumenstyk | APRIL 08, 2018

August 2, 2018
Learning is More On Demand (PDAs)
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
24 seconds: http://curtbonk.com/jetsons24.html
44 Seconds: http://curtbonk.com/jetsons44.html

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

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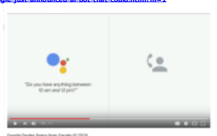
January 9, 2017
Learning is More On Demand
Jill Watson, Round Three, Georgia Tech course prepares for third semester with virtual teaching assistants, Jason Maderer, Georgia Tech News Center
http://www.news.gatech.edu/2017/01/09/jill-watson-round-three
The Terribly Thin Conception of Ethics in Digital 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

NEWS CENTER

ROBOT TEACHER FOOLED STUDENTS FOR MONTHS

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
Entire video (4:11): http://curtbonk.com/google2018.html
Donald Clark Plan B
http://donaldclarkplanb.blogspot.ca/2018/05/google-just-announced-ai-bot-that-could.html?m=1

Some Weird Things Are Going On...
Weirdness #1: Never Stop Learning!

MOOC Trends and Recent Data

Weirdness #2: MOOCs are not dead
August 19, 2018
Cumulative Growth in Number of MOOCs, 2011-18
Almanac 2018, Chronicle of Higher Education
https://www.chronicle.com/article/Top-5-MOOC-Providers-by-Number/244090?cid=cp216

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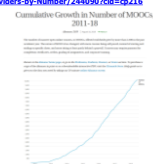
January 22, 2018
Learning is More Massive
MOOCs for Credit
Class Central
https://www.class-central.com/report/mooc-for-credit/
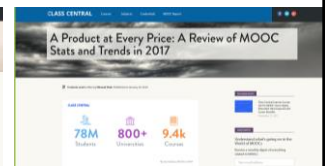
Weirdness #3: Your Friends are doing MOOCs
June 15, 2017
Massive List of MOOC Providers Around The World, Class Central
JMOOC, K-MOOC, and T-MOOC?
https://www.class-central.com/report/mooc-providers-list/

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Weirdness #4: Summer MOOC Discounts
Email inbox: June 10, 2018
edX (Summer discounts)
https://www.edx.org/course

Weirdness #5: Master's of Accountancy MOOCs?
Email inbox: June 11, 2018
Coursera
https://www.coursera.org/
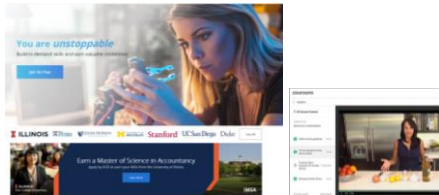
Weirdness #6: MOOC Info in Engagement Announcements
September 26, 2018
The Future of Professional Credentialing ... in an Engagement Announcement
Joshua Kim, Inside Higher Ed
https://www.insidehighered.com/digital-learning/blogs/technology-and-learning/future-professional-credentialing-engagement

May 19, 2016
Weirdness #7: 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

Weirdness #8: Hundred+ MOOC Clubs
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."

Weirdness #9: We All Teach the World
October, 2018
Teaching the World, Sarah Fister Gale, CLO
Chapter 19: Harnessing the Power of Open Learning to Share Global Prosperity and Eradicate Poverty
Sheila Jagannathan, World Bank, Washington DC
https://magazine.clomedia.com/issue/october-2018/teaching-the-world/
https://magazine.clomedia.com/issue/october-2018/
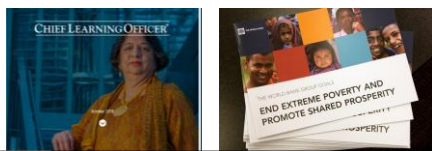
May 20, 2016
Chapter 18: Changing the Tune:
MOOCs for Human Development? A Case Study
(agMOOCs in India)
Balaji Venkataraman and Asha Kanwar (COL)
http://www.agmoocs.in/

Weirdness #10: MOOC Wave #2 is here!
May 21, 2018
The Second Wave of MOOC Hype Is Here, and It's Online Degrees
Dhawal Shah, Class Central
https://www.edsurge.com/news/2018-05-21-the-second-wave-of-mooc-hype-is-here-and-it-s-online-degrees

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September 12, 2018
Coursera's CEO on the Evolving Meaning of 'MOOC'
Dian Schaffhauser, Campus Technology
https://campustechnology.com/articles/2018/09/12/courseras-ceo-on-the-evolving-meaning-of-mooc.aspx

Jeff Maggioncalda, Coursera CEO

Weirdness #11: Mega Millions of MOOC Users
January 22, 2018
A Review of MOOCs Stats and Trends in 2017, Dhawal Shah, Class Central
https://www.class-central.com/report/mooc-stats-and-trends-2017/

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

Providers

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.

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Weirdness #12: Discounted MOOC-based MBAs
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)	FutureLearn	Deakin University	£24k
Development and Humanitarian Action (Masters)	FutureLearn	Deakin University	£24k
Professional Practice: Information Technology (Masters)	FutureLearn	Deakin University	£24k

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October 12, 2018
Weirdness #13: Microcredentials and Nanodegrees
Learning is More on Modular
edX Expands MicroMasters Programs With Data Science ("nanodegrees")
Digital Leadership and More, Sri Ravipati, Campus Technology
https://campustechnology.com/articles/2017/03/01/edx-expands-micromasters-programs-with-data-science-digital-leadership-and-more.aspx
https://www.insidehighered.com/news/2018/10/12/edx-launches-nine-low-cost-online-degrees
Lindsey McKenzie, Inside Higher Ed
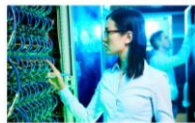
October 30, 2017
Weirdness #14: MOOCs ramp up new fields
Report: 59% of employed data scientists learned skills on their own or via a MOOC
Alison DeNisco Rayome
https://www.techrepublic.com/article/report-59-of-employed-data-scientists-learned-skills-on-their-own-or-via-a-mooc/

MOOCs and Open Education Around the World
http://routledge-ny.com/books/details/9781138807419/

Tired of MOOCs…?

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

Part III. Technology Tomorrow
http://www.huffingtonpost.ca/dr-marie-bountrogianni/prepare-for-future-learni_b_16407756.html
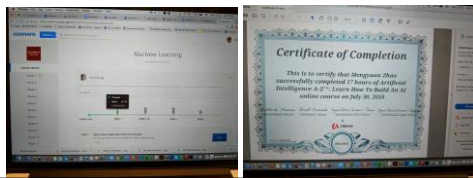

How Human is Too Human for Robots?

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.udemy.com/artificial-intelligence-az/
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.achievingthedream.org/sites/default/files/initiatives/launching_oer_degree_pathways.pdf
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-education 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 $121 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://theumlaut.com/binge-learning-is-online-education-s-killer-app-84da18f8ae76

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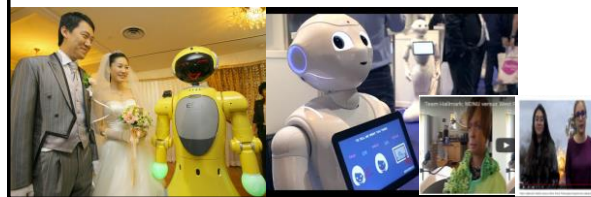(Paul Kim, 2018)

February 27, 2017
5. Web Conferencing Walls
Global Learning Partner or PBL Team Selection Walls
http://www.thelivingmoon.com/43ancients/02files/Library_Alexandria.html

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/article/2018/09/26/academics-push-expand-use-ai-higher-ed-teaching-and-learning
https://www.ibm.com/blogs/research/2018/08/mandarin-language-ai/
https://www.youtube.com/watch?time_continue=4&v=7EuSTu1iR2A
1:17: http://curtbonk.com/mandarin.html

January 30, 2017
7. Professor Einstein PDA's
http://www.usatoday.com/story/tech/2017/01/30/robotic-barista-now-serving-really-fast/95888780/

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-barista-now-serving-really-fast/95888780/

February 27, 2017
8. Robot Collaborators/Partners
http://www.thelivingmoon.com/43ancients/02files/Library_Alexandria.html

January 16, 2018
Robots are better at reading than humans
Brett Molina, The USA Today
https://www.usatoday.com/story/tech/news/2018/01/16/robots-better-reading-than-humans/1036420001/
Video (57 seconds): http://curtbonk.com/robots1.html

March 29, 2017
Every industrial robot takes up to 6 jobs, study finds
Steve Goldstein, MarketWatch
http://www.marketwatch.com/story/over-6-million-jobs-at-risk-from-robots-now-study-finds-2017-03-29
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

9. Café Classroom and Café Connectedness
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. …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
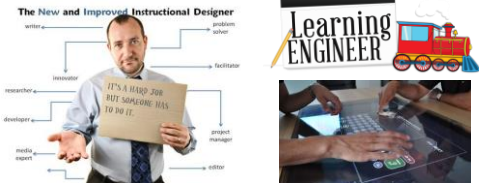
February 27, 2017
11. World Knowledge Refreshment Stations
http://www.thelivingmoon.com/43ancients/02files/Library_Alexandria.html

March 28, 2017
12. Brain-based Learning
Elon Musk's Neuralink wants to plug into your brain, Marco della Cava, USA Today (includes 34 second video)
https://www.usatoday.com/story/tech/talkingtech/2017/03/27/todas-musk-may-now-want-plug-into-your-brain/99711510/
http://trainingshare.com/musk.html

Poll:
Evolution or Revolution?

We are entering a jumping off point...
(South University of Science and Technology of China, Wednesday June 10, 2015)

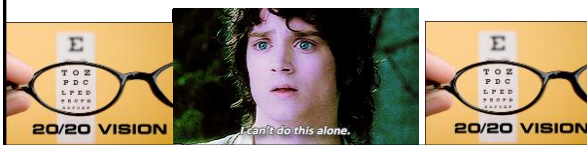## Things are heating up!

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