

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

Curtis J. Bonk, Professor, Indiana University

cjbonk@indiana.edu

<http://curtbonk.com/>



1

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. Trends for tomorrow



2

(Circa Confucius 551–479 BCE)



3

Part 1: Jobs are Changing Education 1.0

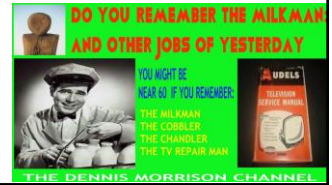
'Those Jobs Are Gone'

Steve Kolowich, The Chronicle of Higher Education

<http://www.chronicle.com/article/Who-s-Who-s-Gone/229564>

'Those Jobs Are Gone'

A 19th-century illustration of the white world of William Miller, a factory worker and a group of 19th-century workers in a factory. They are depicted in a factory setting, with one worker in the foreground and a group of workers in the background. The illustration is titled 'THE DENNIS MORRISON CHANNEL'.



4

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-2030/99999999/>

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



5

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



6

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.



7

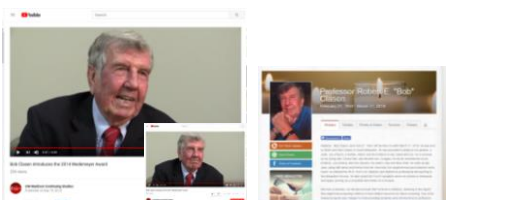
May 22, 2019
Who Remembers VisiCalc???
How computing's first 'killer app' changed everything
Tom Harford, BBC News
<https://www.bbc.com/news/business-47802280>



Dan Bricklin, inventor of the first computer spreadsheet


8

September 19, 2014
Bob Clasen, University of Wisconsin
https://www.youtube.com/watch?v=kCm1_MGaqec&feature=youtu.be
February 27, 1934-March 17, 2018
<https://www.crossfuneralservice.com/obituaries/249139/Robert-Clasen/>



9

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/6237/remember-education-20-the-rise-and-fall-of-reader-rabbit>
Rocky's Boots: <https://www.youtube.com/watch?v=a-NLH58b1Ik>
Project YES (Curt Bonk): <https://youtu.be/bZD5mQH4Jug>



10

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



11

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.

12

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)

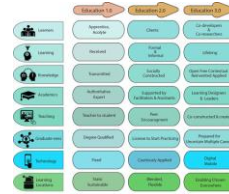
13

September 18, 2017

Education 1.0 to 3.0

Gilly Salmon, University of Liverpool, UK

<http://www.gillysalmon.com/learningfutures.html>



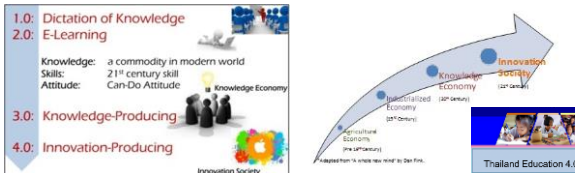
14

Now What is Education 4.0?

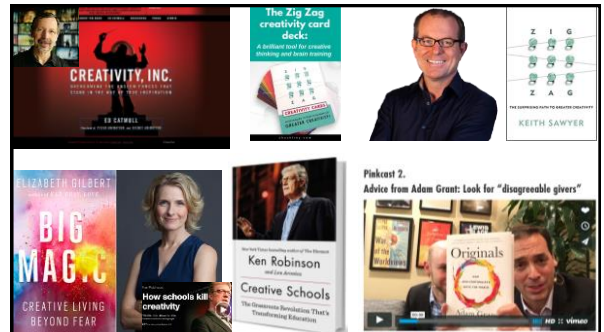
"Innovation-producing education. Learn more in:
Development of Individual Agency within a Collaborative,
Creative Learning Community"

<http://www.igi-global.com/dictionary/education-40/41755>

<https://thinc.in.th/engadmission/education4.html> (Chula Engineering)



15

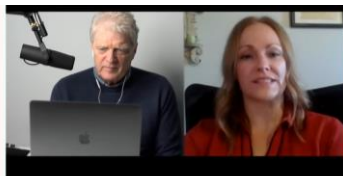


16

June 26, 2020

Learning from Home with Sir Ken Robinson
- Episode 3 with Natalie Bigney

<https://www.youtube.com/watch?v=1hpiMf13p08&feature=youtu.be>



Learning from Home with Sir Ken Robinson - Episode 3 with Natalie Bigney

17

March 13, 2019

The Career Curriculum Continuum

Andrew Hermayn, Inside Higher Ed

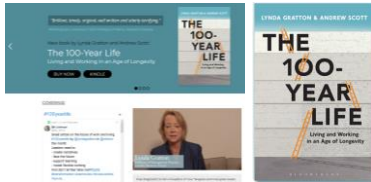
<https://www.insidehighered.com/digital-learning/article/2019/03/13/inside-highered-com-yelp-critics-remains-ideas-education>

In fact, every year since 1840, there has been a three-month increase in life expectancy. Today the average life expectancy in the United States is 79, and millennials have a 50 percent chance of living to 100 years. In past centuries, people would study, get a job and retire at age 65. But times have changed, and it's now estimated that the average person will have 12 to 14 careers in a lifetime.

18

July 24, 2018
The 100-Year Life: Living and Working
in an Age of Longevity
 Lynda Gratton and Andrew Scott

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



19

March 13, 2019
The Career Curriculum Continuum
 Andrew Hermalyn, Inside Higher Ed

<https://www.insidehighered.com/digital-learning/article/2019/03/13/how-university-career-center-features-heres-opinion>



20

February 25, 2020
The 60 Year Curriculum:
 Developing New Educational Models to Serve the Agile Labor Market

Chris Dede, Harvard University, The Evollution
<https://evolution.com/revenue-streams/professional-development/for-60-year-curriculum-developing-new-educational-models-to-serve-the-agile-labor-market/>
 219: The 60-Year Curriculum with Rovy Branon
<https://thebellac.com/podcast/219>



21

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

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

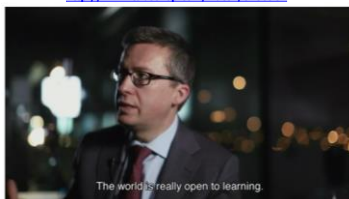


"It's quite clear that the established models of education have to change and adapt to the new environment."

22

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

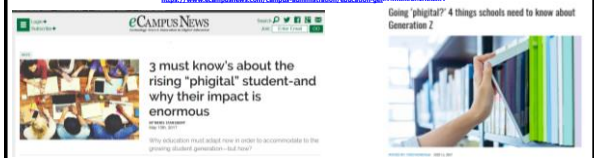
Klaus Schwab, Founder and Executive Chairman, World Economic Forum
<http://www.weforum.org/agenda/2016/02/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
<http://trainingshare.com/fourth-industrial-revolution-video-clip.php>
<http://www.tubeshop.com/watch/8280981>



23

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 Stanbury, eCampus News
<https://www.ecampusnews.com/education/education-qa-phigital-student/>



24

July 30, 2020
Disruptive Ecology:
The New Normal of Education in Post
COVID-19



25

Poll #1: Before COVID, did you ever teach a blended (face-to-face and online) course?

- a. Yes many.
- b. Yes, just a couple.
- c. No, but I taught one or more technology enhanced ones.
- d. No but I am willing to try.
- e. No and I like it that way.



26

Poll #2: Before COVID, did you ever teach a fully online course?

- a. Yes, many.
- b. Yes, just a couple.
- c. No, but I taught one or more blended ones.
- a. No but I am willing to try.
- b. No and I like it that way.



27

Poll #3: Have you reflected on your teaching philosophy or approach during COVID-19?

- a. Yes many times and I am dramatically changing my philosophy statement.
- b. Yes many times and I am taking action (meeting people, reading more, attending webinars like this, etc.).
- c. Yes, I thought about it a couple of times and I am tweaking it.
- d. Not sure. I'm kinda brain dead right now.
- e. No, my teaching philosophy is basically the same.



28

Poll #4: Have you even been to an e-learning or online learning conference, institute, or summit?

- a. Yes many times.
- b. Yes, once or twice.
- c. No, but I want to go.
- d. No. And I am not going to go.



29

Part II. Education 20/20

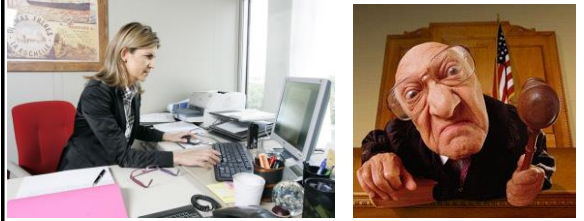


30



31

From Instructor as Credit Manager and Court Room Judge



32

1. Instructor as Counselor



33

2. Instructor as Consultant



34

3. Instructor as Conductor



35

4. Instructor as Course Ambassador



36

5. Instructor as Curator



37

6. Instructor as Concierge



38

7. Instructor as Camping Trip Guide



39

8. Instructor as Cultivator



40

20 New Roles of the Instructor

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



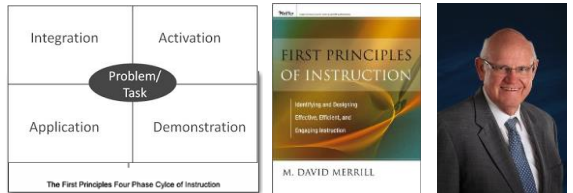
41



42

Merrill's First Principles of Teaching/Instruction

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



43

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

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



44

1. The Principle of Flexibility

<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
 (e.g., multiple due dates, grace period, flexible agenda, etc.)



45

2. The Principle of Convenience

<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
 (e.g., multiple ways to turn in, record the class, get student input on time to teach the class, etc.)



46

3. The Principle of Collegiality

<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
 (e.g., help turn papers into publications, introduce students to colleagues, ask them to share resources and papers with you, etc.)



47

4. The Principle of Cheerfulness and Optimism

<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
 (e.g., smile, celebrate accomplishments, positive feedback before any criticisms, etc.)



48

5. The Principle of High Expectations

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., post high quality student work, challenge, offer job aids, mention students prior successes like conference presentations from final projects, etc.)



49

6. The Principle of Choice and Options

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., sign up for weeks to present, have 10 midterm or final options and pick any 4, choose if want to work as a group/team or individually submit, etc.)



50

7. The Principle of Empowerment and Autonomy

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., build something for a wider audience, design, negotiate the syllabus in a wiki, students vote on agenda items, student presentations of final projects, etc.)



51

8. The Principle of Support and Feedback

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., offer extensive feedback, assign critical friends for feedback, offer summary feedback for common questions, use job aids and scaffolds, etc.)



52

9. The Principle of Spontaneity

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., try stuff out and debrief, teach agenda or syllabus, combine ideas, etc.)



53

10. The Principle of Organization

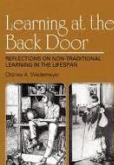

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., create and share agenda in advance, contact guest speakers in advance and share their bios and pics, arrange order of student presentations, etc.)



54

12. The Principle of Nontraditional Learning

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



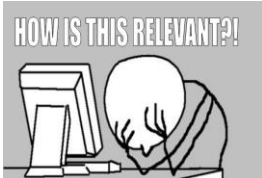
13. The Principle of Passion and Inspiration

<http://twareducational.blogspot.com/2011/09/home-let-principles-of-instruction.html>

The image is a composite of two photographs. The left photograph shows a wide, modern building with a curved roofline, possibly a school or a corporate building, situated on a hill overlooking a body of water. Overlaid on this image is the text 'INSPIRATION', 'PASSION', and 'PURPOSE' in a bold, sans-serif font. The right photograph shows a young girl in a school uniform, smiling and holding a chalkboard. On the chalkboard, there is a drawing of a person with a large head and a small body, and some text in a non-Latin script.

14. The Principle of Relevance and Meaningfulness

<http://www.studymedman.blogspot.com/2011/09/100-his-100-principles-of-instruction.html>



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

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



16. The Principle of Expanded Resources

<http://travelmedian.blogspot.com/2011/08/books-1st-principles-of-instruction.html>

textbooks students policy video curriculum learning audio group source
transformation discussions resources applications content paper-based
assessments teaching
videos peer test podcasts
FAQ licensing
educational data streaming webinars documents access maps
science multimedia
computer-based discussion courseware

10

The World of Open Education



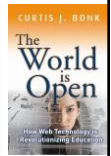
61

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



62



63

The World is very open! (South University of Science and Technology of China, Wednesday June 10, 2015)



64

17. The Principle of Human Connectedness

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



65

18. The Principle of Cognitive Apprenticeship

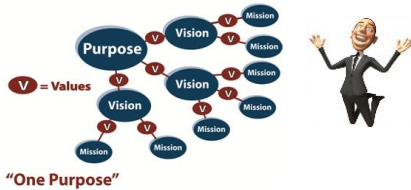
<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



66

19. The Principle of Purpose and Vision

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



67

20. ??? (what is missing)

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



68

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

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



69

Clearly... Learning is Changing!



70

Part IV. Thirty Ways Learning is Changing...

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



71

November 11, 2020

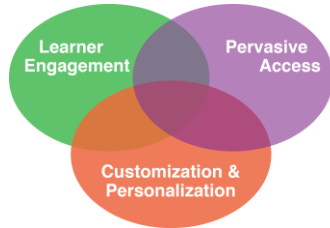
Educational technology is coming of age during the pandemic: Nowhere more so than in India

<https://www.economist.com/international/2020/11/11/educational-technology-is-coming-of-age-during-the-pandemic>



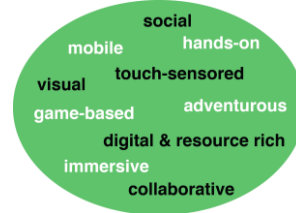
72

30+ Ways Learning is Changing: The Mega Trends



73

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



74

April 20, 2020

Learning is Digitally Rich

New website offers tips for teachers about virtual special education

Carolyn Jones, April 20, 2020, EdSource
Teachers can share ideas online for serving students with disabilities during the pandemic

<https://edsource.org/2020/new-website-offers-tips-for-teachers-about-virtual-special-education/628241>



75

July 26, 2020

Learning is Digitally Rich

EDUCATING ALL LEARNERS DURING THE COVID-19 DISASTER
An alliance dedicated to equity for complex learners

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

Resources and Guidance for Educators

<https://www.educatingalllearners.org/for-educators>



76

Interactive Labs and Simulations Learning is More Hands-on

<http://phet.colorado.edu/en/simulation/energy-skate-park>



77

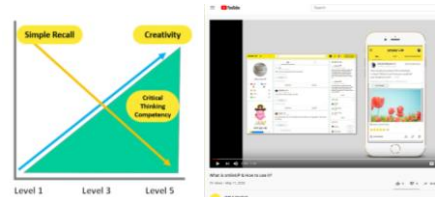
May 11, 2020

Learning is More Game-based

What is smileUP & How to use it?

SMILE, Paul Kim at Stanford

<https://www.youtube.com/watch?v=pblU8sSALWo>



78

Question Answering: Level 1 – Level 5

Level 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.

Level1 question: 95.9999131% confidence

Level 5

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 slow and the wings are working hardest to produce lift. The bigger the plane, the bigger the vortices. The most dangerous vortices come from larger planes that are vulnerable should they run into one.

Level5 question: 95.9999988% confidence

November 8, 2018
Learning is More Personalized
AI Question Asking
Paul Kim keynote in Taiwan
Education 4.0 Conference

79

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)

80

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-consumer-electronics-show/3883778602/>

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

81

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/facebook-portal-video-calling-devices>
Video (1 minute): <http://curtbank.com/facebook-portal.html>
<http://www.usatoday.com/story/tech/2017/04/07/youtube-takes-facebook-mobile-lens/37564592/>

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

82

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=9uac72hhb4/> (Feb 13, 2018)
Video 1:46: Microsoft AI: Amplifying Human Ingenuity: <https://www.youtube.com/watch?v=C3NoMnU7ZNP6g>
Video 1:00: Microsoft AI: Empowering Innovators ft. Common: <https://www.youtube.com/watch?v=250Mdg43w>
Video: 1:00 Microsoft AI + Common: Preserving History ft. Common: <https://www.youtube.com/watch?v=20ZjaTh4SM> (April 22, 2018)
Video: 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common: <https://www.youtube.com/watch?v=7zaufdGHh0> (April 22, 2018)

83

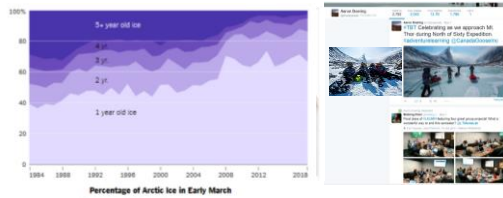
October 20, 2020
Learning is More Visual
The British Museum
<https://britishmuseum.withgoogle.com/>

84

May 14, 2018 (Engagement) Learning is More Adventurous

Aaron Doering, Chasing Seals, TEDx

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



85

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.

86

July 17, 2017 Learning is More Immersive Learning Chemistry in Virtual Reality, Sarah Hardman, New Learning Times

<https://newlearningtimes.com/2017/07/17/learning-chemistry-in-virtual-reality/>
1:38 video: <https://vimeo.com/246849457/38377>
AR: <http://curtbonk.com/chemistry-ar.html>
VR: <http://curtbonk.com/chemistry-vr.html>
AR-VR: <http://curtbonk.com/chemistry-ar-vr.html>



87

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=DYqiaHWTVg>
27 seconds: <http://curtbonk.com/thejournal27.html>
38 Seconds: <http://curtbonk.com/thejournal38.html>
1: 10: <http://curtbonk.com/thejournal.html>



88

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



89

June 23, 2020 Learning is More Synchronous Turns Out You Can Build Community in a Zoom Classroom

Rachel Toor, The Chronicle of Higher Education
<https://www.chronicle.com/article/Zoom-Boom>



90

September 23, 2020
Learning is More Synchronous
 Introduction to Class for Zoom
 Michael Chasen, Co-Founder & CEO of Class for Zoom
https://www.youtube.com/watch?time_continue=3&v=3_2MYE0isR&feature=emb_logo



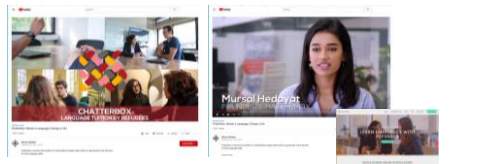
91

November 10, 2020
Learning is More Synchronous
 'Telepresence' robots are making virtual school feel a little more like real school
 Jennifer Davis, The Washington Post
<https://www.economist.com/international/2020/11/11/educational-technology-is-coming-of-age-during-the-pandemic>



92

June 5, 2018
Learning is More Global
 Chatterbox: Master a Language, Change a Life
 The overall winner in the competition was **Chatterbox**, an online language school powered by refugees
<https://wearechatterbox.org/>
 Mursal Hedayat, London
<https://www.youtube.com/watch?v=3K3Yexu0e0>



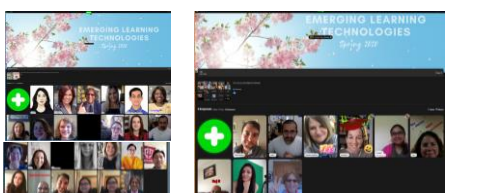
93

July 7, 2020
Learning is More Immediate...
Science in the News
 'Holy Grail' of dinosaur fossils discovered in Egyptian desert, Doyle Rice, USA Today
<http://www.usatoday.com/story/news/science/2020/07/06/egypt-dinosaur-fossils/5440941>
 'Siberian unicorn' once walked among early humans, Tara John, CNN
<https://edition.cnn.com/2020/07/07/science/siberian-unicorn-humans-early/index.html>
<http://www.warwick.ac.uk/study/news/2020/07/07/20200707-science-dinosaur-egypt>
 Video: 53 seconds



94

April 11, 2020
Learning is More Video-based...
 (e.g., Flipgrid)
 Ed Tech with Adam: <https://www.youtube.com/watch?v=hysv0PwqFs>
<https://thechronicle.com/2018/06/18/microsoft-acquires-social-learning-platform-flipgrid/>



95

April 29, 2020
Learning is More Video-based...
 Animated COVID-19 prevention video goes viral
 Mandy Erickson, SCOPE Stanford Medicine
<https://scope.stanford.edu/2020/04/29/animated-covid-19-prevention-video-goes-viral/>
<https://www.youtube.com/watch?v=UcF0duwQ8g>



96


July 25, 2020
Learning is More Video-based...
Silver Lining for Learning
<https://silverliningforlearning.org/>
https://www.youtube.com/channel/UC9XEsh89qrTpmVvpQc_aA/live




97

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




OpenStax Saved 1 Million Students \$70 Million

Open Textbook Network
 WE ARE A COMMUNITY DEDICATED TO RESULTS

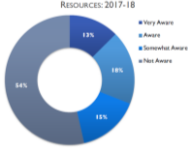
- 600+ Courses represented
- \$8.5 Million Student savings by OTN members
- 45% of faculty who attend an OTN workshop adopt an open textbook

98

January 9, 2019
2018 National Higher Education Report
Freeing the Textbook: Open Education Resources in U.S. Higher Education, 2018
 Julie E. Seaman and Jeff Seaman
<https://www.onlinelearningsurvey.com/reports/freeingthetextbook2018.pdf>



AWARENESS OF OPEN EDUCATIONAL RESOURCES: 2017-18



99

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




Freshman Year For Free
 Take courses, high quality courses online for free. No textbooks. No college credit.

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

By Gailan Williamson | 8/9/2017

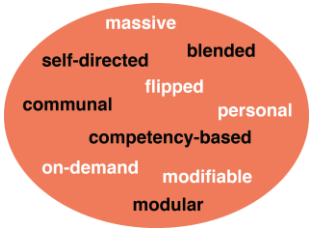
100

March 21, 2018
Learning is More Direct from Experts
TeachMeNow and VIPKid
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/>




101

How Learning is Changing:
Mega Trend #3. Customization




102


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.

103

July 31, 2020

Learning is More Personal


Khan Academy aims to give 'strategic supplement'


Brett Molina, USA Today


<https://www.usatoday.com/story/tech/2020/07/30/khan-academy-ceo-sal-khan-prepping-fall-virtual-learning/5524580002/>

Khan Academy aims to give 'strategic supplement'

Q&A: Khan Academy CEO Sal Khan on the new school year and virtual learning







104

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>



105

[illegible]

106

August 22, 2020

Learning is More Blended

Blended in Action

Raise Your Hand Texas

<https://www.texas.gov/newsroom/2020/08/22/texas-education-agency-launches-blended-learning-resources-for-schools/>

Resources

Introduction to Blended Learning

Blended Learning Models

Blended Learning Resources

Blended Learning Tools

Profile of Existing Blended Learning Classrooms

Blended Learning Tools

Map of Texas

Introduction to Blended Learning

Blended Learning Models

Blended Learning Resources

Blended Learning Tools

Profile of Existing Blended Learning Classrooms

Blended Learning Tools

Map of Texas

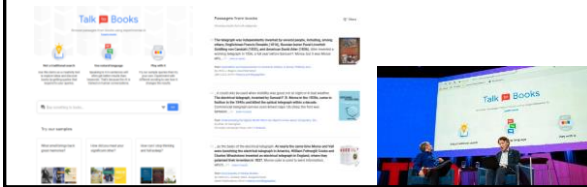
107

[illegible]

108

September 17, 2018 Learning is More On Demand Talk to Books

<https://books.google.com/talktobooks/>
<https://ux.com/1232664/talk-to-books-at-ted-2018-ey-harvard-univelle-people-astounding-new-search-tool-will-allow-us-to-ask-for-readings-thousands-of-books/>



109

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

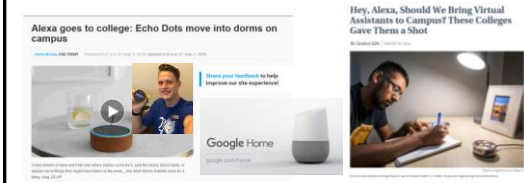
<https://www.usatoday.com/story/tech/2017/05/09/amazon-echo-show-touchscreen-alexa/10144884/>
24 seconds: <http://courtbomb.com/jetsons24.html>
44 Seconds: <http://courtbomb.com/jetsons44.html>



110

August 2, 2018 Learning is More On Demand Hey, Alexa, Should We Bring Virtual Assistants to Campus? These Colleges Gave Them a Shot Lindsey Ellis, The Chronicle of Higher Education

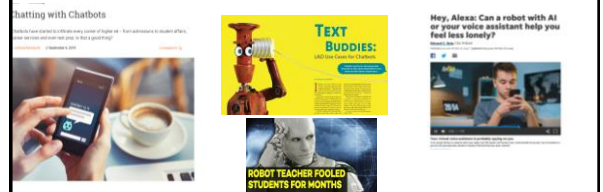
<https://www.chronicle.com/article/Hey-Alexa-Should-We-Bring/244129>



111

May/June 2020 Learning is More On Demand Chatting with Chatbots and Text Buddies Lindsey McKenzie, Inside Higher Ed

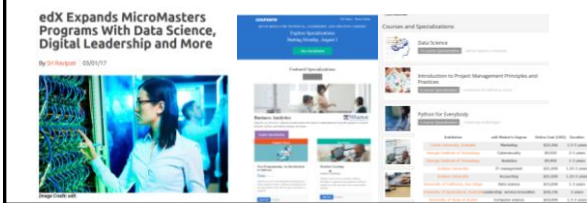
<https://www.insidehighered.com/news/2019/05/06/experience-chatbots-higher-ed>
<https://www.usatoday.com/story/tech/2019/11/09/alexa-google-assistant-ai-robots-become-substitute-friends/4057885002/>



112

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

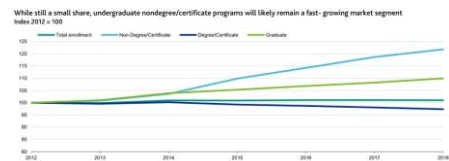
<https://www.campus-technology.com/news/2018/10/12/edx-micro-masters-programs-with-data-science/>
Lindsey McKenzie, Inside Higher Ed
<https://www.insidehighered.com/news/2018/10/12/edx-micro-masters-programs-with-data-science/>



113

August 27, 2020 Alternative Credentials on the Rise Paul Fain, Inside Higher Ed

<https://www.insidehighered.com/news/2020/08/27/alternative-credentials-short-term-software-credentials-will-be-sustained>

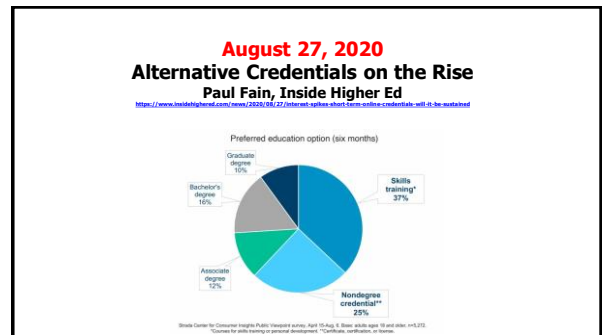


Sources: Moody's, U.S. Department of Education

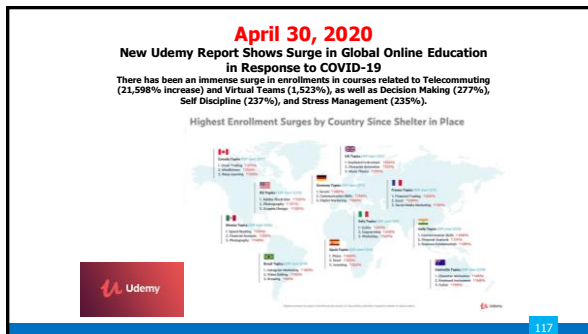
114



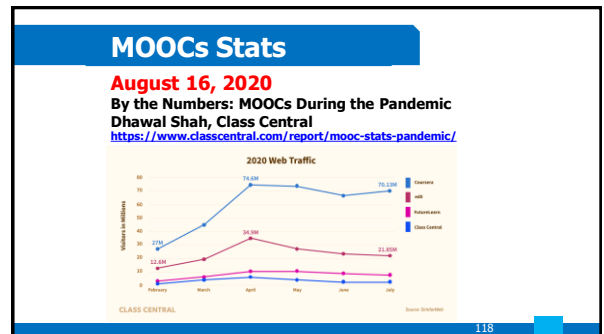
115



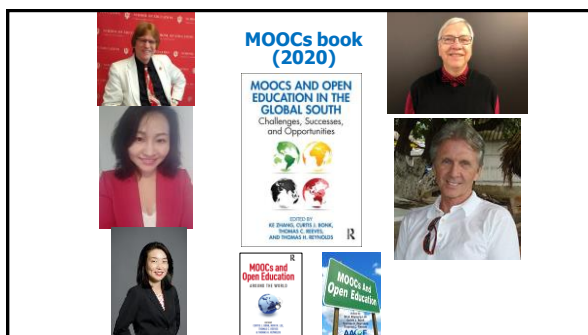
116



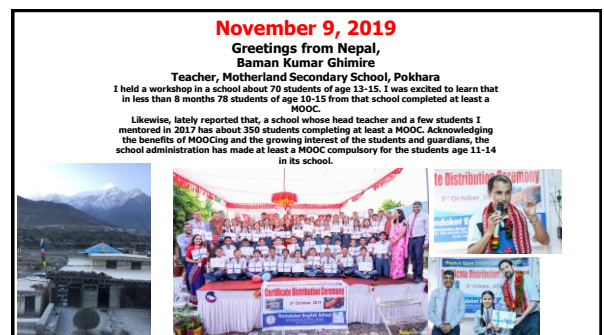
117



118



119



120

November 26, 2019
Chapter 14. Capacity Building of Teachers: A Case Study of the Technology-Enabled Learning (TEL) Massive Open Online Courses
Sanjaya Mishra, Martha Cleveland-Innes, and Nathaniel Ostashevski

Week 1: Models of Technology-Enabled Learning

- 1.1: Community of Inquiry
- 1.2: Two Models: TPACK and TIM
- 1.3: On Teaching Presence

Week 2: Technology in Education

- 2.1: Integrating Technology in Education
- 2.2: Benefits of Technology in Education

Week 3: Open Educational Resources

- 3.1: Understanding OER
- 3.2: Types of Open Licenses
- 3.3: Finding Open Educational Resources

Week 4: Application of Technology

- 4.1: Practical Applications of Technology
- 4.2: Getting Help with Technology

Week 5: Creating Technology-Enabled Learning

- 5.1: Creating Technology-Enabled Learning






FIGURE 14.2 Weekly course content of TEL MOOC.

121

November 26, 2019
Chapter 16: Courses for a Cause:
MOOC Contributions to a "Better Place for All"
(Marianne Krasny et al., 2020)



122

November 26, 2019
Chapter 25. Responsive Innovations in MOOCs for Development: A Case Study of AgMOOCs in India 300
Balaji Venkataraman and Tadinada V. Prabhakar
(agMOOCs in India)
<http://www.agmooc.in/>

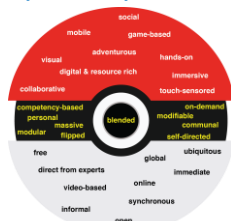






123


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



124

June 8, 2019
The second half of humanity is joining the internet:
They will change it, and it will change them
The Economist
<https://www.economist.com/news/2019/06/08/the-second-half-of-humanity-is-joining-the-internet>


The second half of humanity is joining the internet
They will change it, and it will change them



125

Part V. Trends for Tomorrow
http://www.huffpost.com/entry/marie-kourougianni/prepare-for-future-learn_b_16407755.html

How Human Is Too Human for Robots?



126

August 1, 2018

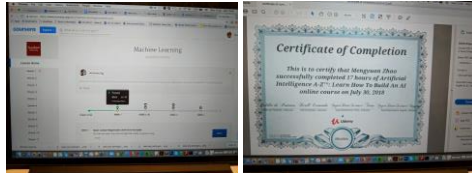
1. Independent Studies Via MOOCs

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

Mengyuan Zhao
<https://www.yu.edu>

<https://www.udemy.com/artificial-intelligence-az/>
<https://www.coursera.org/learn/machine-learning>

<https://www.coursera.org/learn/machine-learning>



127

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.achievethecommons.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

- 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 study. 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.

128

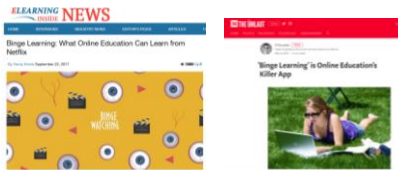
September 22, 2017

3. Binge Learning Experiences

What Online Education Can Learn from Netflix

Henry Kronk, E-learning Inside News
<http://www.insideelearning.com>

<https://theumlaut.com/binge-learning-is-online-education-s-killer-app-84da18f8ae76>



129

June 11, 2017 (New Learning Times)

4. Rise of Super E-Mentors and AI Coaches (Paul Kim, 2018)



130

September 26, 2018

5. 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=7FuStU1IR2A

1:17: <http://curtbonk.com/mandarin.html>

doi:10.1371/journal.pone.0142002.g002



131

January 30, 2017

6. 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)

Electronics Show 2017. (Photo: Robert Hanashiro, USA TODAY)
<http://www.usatoday.com/story/tech/2017/01/30/robotic-barista-now-serving-really-fast/95888780/>


132

June 15, 2019

7. University of the Third Age, London, UK
<https://www.u3a.org.uk/>

U3A (The University of the Third Age) is a UK-wide movement which brings together people in their 'third age' to develop their interests and continue their learning in a friendly and informal environment.


If you're wondering what we mean by the third age - it is a time after you have finished working full-time or raising your family and have time to pursue your interests or just try something new.



133

June 10, 2020

Learning in 2050
 Edward J. Mahoney and Joshua Kim, Inside Higher Ed
<https://www.insidehighered.com/digital-learning/blogs/learning-innovation/learning-2050>



Per Kim and Mahoney: "Where might we be in 2050? As we said, a lot can happen. We might see changes in how we use technology, and how students use technology engage in both curricular and co-curricular activities."

134

Chat Window Poll: Is this an Evolution or Revolution?



135


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



136

Poll #5: What are you most concerned about then teaching online?


- a. Access issues
- b. Personalization issues
- c. Engagement issues
- d. Nothing...everything is running smooth



137

Poll #6: Does all this stuff that you heard give you a headache?

- a. Yes, but I am still excited to try things out.
- b. Yes, and I need some medicine and a break.
- c. Not sure.
- d. No, let's go all day.
- e. No, let's go another hour.
- f. No, it was just right.



138

Poll #7: Do you consider yourself to be an:

- a. Education 1.0 teacher
- b. Education 2.0 teacher
- c. Education 3.0 teacher
- d. Education 4.0 teacher



139

Poll #8: Education 3.0 or even 4.0 is possible in the next few years...?

- a. Definitely, Definitely, Definitely...
- b. Probably, Probably, Probably,
- c. Maybe, Maybe, Maybe
- d. You got to be kidding...NO!



140

Things are heating up!



141

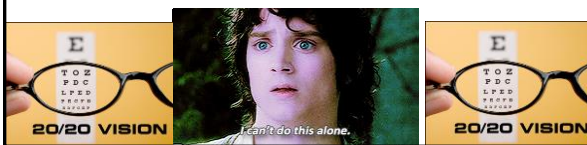
The Learning Revolution is coming within reach!



142

**Remember...
"I cannot do this alone."**

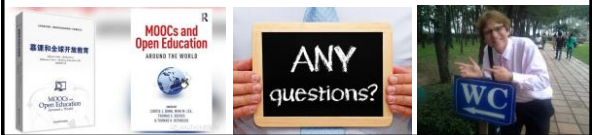
"I cannot do this alone."
"I cannot do this alone."
"I cannot do this alone."



143

Any Questions or Comments?

Slides at: TrainingShare.com
Papers: PublicationShare.com
Free book: <http://tec-variety.com/>
Email: cjbonk@indiana.edu



144