

Education/Training 20/20: En"visioning" Change and the LAST Principles You'll Ever Need

Curtis J. Bonk, Professor, Indiana University

cjbok@indiana.edu

<http://curtbonk.com/>



1

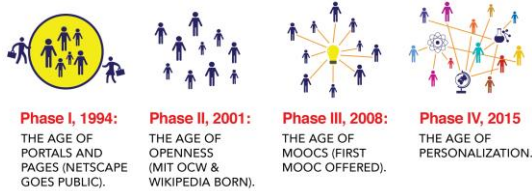
Talk Overview

1. Jobs are changing. Learning environments 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. Final thoughts and predictions



2

The Evolution of E-Learning (All 7 year cycles)



Other prior significant e-learning dates: 1985: FIRST ONLINE COURSE, LINDA HARASIM, UNIV. OF TORONTO
1987: HYPERCARD FIRST SHIPPED.

3

October 24, 2019

Update Complete: U.S. Nuclear Weapons No Longer Need Floppy Disks
Liam Stack, The New York Times

<https://www.nytimes.com/2019/10/24/us/nuclear-weapons-floppy-disks.html>



4

(2000-2003) Captain's Career Course Blended Learning Virtual Tactical Operations Center (VTOC)



5

Language Training (October 27, 2011)

ARMY WEEKLY
Online language training ups the ante on promotion points



6

Military Mobile Learning (See: the U.S. Army Learning Concept for 2015; 2011, January 15). <http://www.youtube.com/watch?v=KD9NGAV3-3k> (4:26 minutes)



7

UNIVERSITY OF HOUSTON College of Medicine Report

January 2018

https://uh.edu/medicine/_documents/college-of-medicine-report-v2.pdf

- Innovative and best practice learning methods will be utilized, including problem-based, case-based, and team-based learning. "Real discovery" clinical practices including the use of standardized patients, virtual reality simulation, and service learning.

BIOLOGICAL SCIENCES CURRICULUM

- The teaching of the biological sciences will be concentrated in the first 16 weeks of the curriculum, but biological sciences concepts will be reinforced and amplified throughout the remaining months of the curriculum that are more clinically focused.
- The biological sciences will be taught within the context of their relevance to clinical practice, utilizing clinical correlations and clinical problem solving through problem-based, case-based, and team-based learning approaches. Clinical faculty will use historical or current health care topics in the past of curriculum.

Behavioral and Social Sciences Curriculum

- The teaching of the behavioral and social sciences will happen across all four years of the curriculum, and will be integrated with the teaching of the other sciences.
- Teaching methods will include direct lecture, problem-based, case-based, and team-based learning methods, case studies, team-based projects, and cooperative learning opportunities. Some of the learning will occur in a non-lecture-based setting.



8

2019 Increasing Demand for Digital Learning Experience and Instructional Design Expertise EDUCAUSE Horizons Report, 2019 Higher Education Edition <https://library.educause.edu/-/media/files/library/2019/4/2019horizonsreport.pdf>

Strategic Challenges | These are the challenges that we understand and know how to solve.

Increasing Demand for Digital Learning Experience and Instructional Design Expertise

Summary
The demand for digital learning experience and instructional design expertise is increasing rapidly. This report explores the factors driving this demand, including the need for personalized learning, the importance of data-driven insights, and the growing role of instructional designers in creating engaging and effective learning experiences. The report also provides recommendations for higher education institutions to meet this demand, including investing in technology, developing new roles, and fostering a culture of innovation.

Horizon Report | 2019 Higher Education Edition



9

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

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

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

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



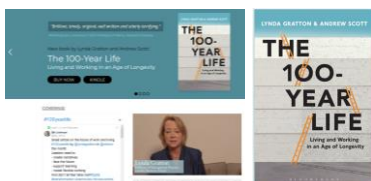
Automation could kill 73 million U.S. jobs by 2030

Robotics | The Washington Post | Published 10/24/2017, Updated 8/24/2018



10

July 24, 2018 The 100-Year Life: Living and Working in an Age of Longevity Lynda Gratton and Andrew Scott <http://www.100yearlife.com/> <https://www.amazon.com/100-Year-Life-Living-Working-Longevity/dp/1543624634>



11

March 13, 2019 The Career Curriculum Continuum Andrew Hermalyn, Inside Higher Ed <https://www.insidehighered.com/digital-learning/article/2019/03/13/how-widespread-career-continuum-should-look>



12

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/>
 (Uniqueness, mobile supercomputing, artificially intelligent robots, self-driving cars, neuro-technological brain enhancements, genetic editing, etc.)
<http://www.bainbridgephd.com/fourth-industrial-revolution-video-clip-short-take>

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

13

April 30, 2017
Education 1.0
'Those Jobs Are Gone'
 Steve Kolowich, The Chronicle of Higher Education
<http://www.chronicle.com/article/Those-Jobs-Are-Gone/23864>

'Those Jobs Are Gone'

As these statistics show, the 19th-century industrial revolution was a time when a group of jobs disappeared faster than the rate at which new ones were created. The 20th-century industrial revolution was a time when the rate at which new jobs were created was faster than the rate at which old jobs disappeared. The 21st-century industrial revolution is a time when the rate at which new jobs are created is faster than the rate at which old jobs disappear.

DO YOU REMEMBER THE MILK MAN AND OTHER JOBS OF YESTERDAY?

YOU MIGHT BE NEAR 60 IF YOU REMEMBER:
 THE MILKMAN
 THE COBBLER
 THE CHANDLER
 THE TV REPAIR MAN

THE DENNIS MORRISON CHANNEL

14

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/330/remember-education-20-the-rise-and-fall-of-the-company-behind-reader-rabbit-and-all-your-favorite-educational-games>
 Rocky's Boots: <https://www.youtube.com/watch?v=a-MJ5S8b1Ik>
 Project YES (Curt Bonk): <https://youtu.be/bZD5mQH4Ujs>

THE RISE AND FALL OF THE COMPANY BEHIND 'READER RABBIT' AND ALL YOUR FAVORITE EDUCATIONAL GAMES

Please choose:

- 1 How to Move
- 2 Building Machines
- 3 Logic Gates
- 4 Rocky's Boots
- 5 Flipflops
- 6 Rocky's Challenge
- 7 End

Rocky suggests, "Play them in order!"

15

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)

16

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

EDUCATION 3.0

17

The Creation of Effective Learning Environments
<http://study.com/academy/lesson/learning-environment-in-the-classroom-definition-importance.html>

ELEMENTS OF A POSITIVE LEARNING ENVIRONMENT

18

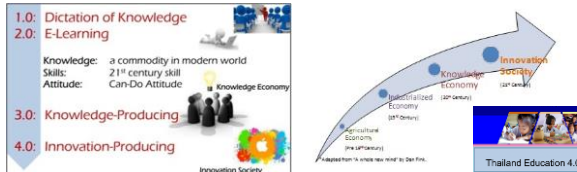
July 29, 2016
**Reimagine Your Learning Space:
 Starbucks Your Classroom!**
 Oskar Cyerman, Teaching Channel
<https://www.teachingchannel.org/blog/2016/07/29/starbucks-your-classroom/>



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.

19

Now What is Education 4.0?
 "Innovation-producing education. Learn more in:
 Development of Individual Agency within a Collaborative,
 Creative Learning Community"
<http://www.igi-global.com/dictionary/education-40/41755>
<https://thinc.in.th/engadmission/education4.html> (Chula Engineering)



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

20

August 21, 2016
**ST Future Economy Roundtable:
 Is Asia ready for the Fourth Industrial Revolution?**
 The Straits Times
<http://www.straits-times.com/454143-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."

21

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/2016/03/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
<http://trainingshare.com/fourth-industrial-revolution-video-clip.php>
<http://www.tubechop.com/watch/8280981>



The world is really open to learning.

22

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, Maria Stansbury, eCarnous News
<http://www.ecarnousnews.com/2017/05/15/3-must-knows-about-the-rising-phigital-student-and-why-their-impact-is-enormous/>



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

23

Undergraduate Gen Z students & information technology
 Vickie Cook, University of Illinois Springfield
https://ohm.google.com/a/uis.edu/cooks_cook/ohm/digital-learning?tmpl=/%2Fsystem%2Fapp%2Ftemplates%2Farticle%2FshowPrintDialog=1

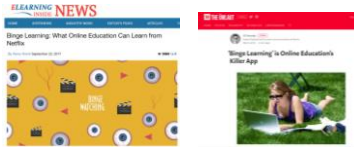



Undergraduate Gen Z students & information technology

24

September 22, 2017
Binge Learning: What Online
Education Can Learn from Netflix
Henry Kronk, E-learning Inside News

<https://theumlaak.com/binge-learning-is-online-education-s-killer-app-95da189bae76>



25

Clearly...
Learning is Changing!



26



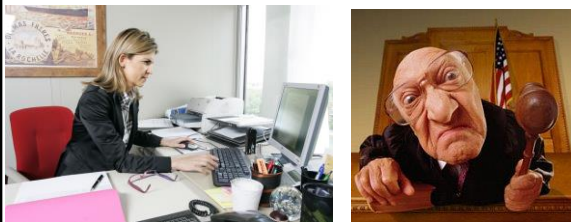
27

Education 20/20



28

From Instructor as Credit Manager
and Court Room Judge



29

1. Instructor as Counselor



30

2. Instructor as Consultant



31

3. Instructor as Conductor



32

4. Instructor as Course Ambassador



33

5. Instructor as Curator



34

6. Instructor as Concierge



35

7. Instructor as Camping Trip Guide



36

8. Instructor as Cultivator



37

20 New Roles of the Instructor



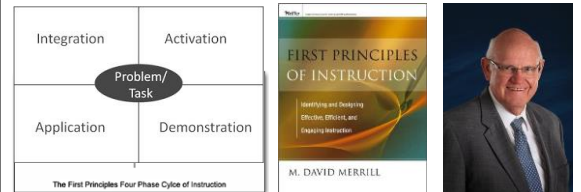
38



39

Merrill's First Principles of Teaching/Instruction

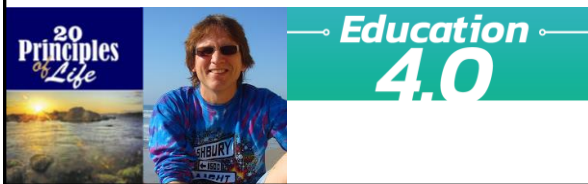
<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



40

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

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



41

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.)



42

2. The Principle of Convenience

<http://travelinmedman.blogspot.com/2011/05/books-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.)



43

3. The Principle of Collegiality

<http://travelinmedman.blogspot.com/2011/05/books-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.)



44

4. The Principle of Cheerfulness and Optimism

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



45

5. The Principle of High Expectations

<http://travelinmedman.blogspot.com/2011/05/books-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.)



46

6. The Principle of Choice and Options

<http://travelinmedman.blogspot.com/2011/05/books-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.)



47

7. The Principle of Empowerment and Autonomy

<http://travelinmedman.blogspot.com/2011/05/books-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.)



48

8. The Principle of Support and Feedback

<http://travellinedman.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.)



49

9. The Principle of Spontaneity

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



50

10. The Principle of Organization

<http://travellinedman.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 bio and pics, arrange order of student presentations, etc.)



51

11. The Principle of Sharing

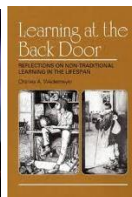
<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



52

12. The Principle of Nontraditional Learning

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



53

13. The Principle of Passion and Inspiration

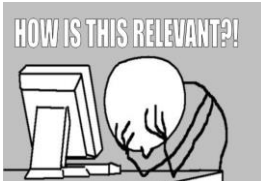
<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



54

14. The Principle of Relevance and Meaningfulness

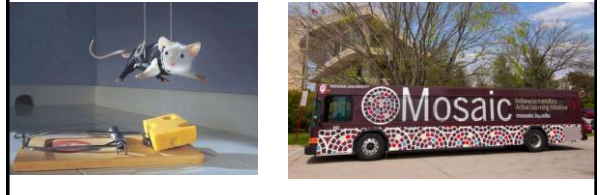
<http://travelinedman.blogspot.com/2011/05/boniks-last-principles-of-instruction.html>



55

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

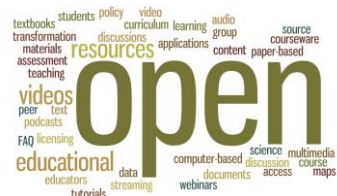
<http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



56

16. The Principle of Expanded Resources

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



57

17. The Principle of Human Connectedness

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



58

18. The Principle of Cognitive Apprenticeship

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



59

19. The Principle of Purpose and Vision

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



60

20. ??? (what is missing)

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



61

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

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



62

The World of Open Education



63

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

64



65

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



66



Fast Forward to 2020...

"Anyone can now learn anything from anyone at any time."



67

Thirty Ways Learning is Changing...

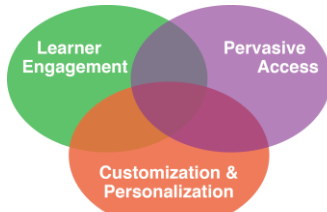
(i.e., it's more informal, video-based, ubiquitous, collaborative, self-directed, global, mobile, open, massive, etc.)



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

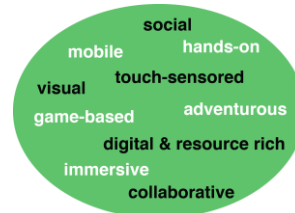
68

30+ Ways Learning is Changing: The Mega Trends



69

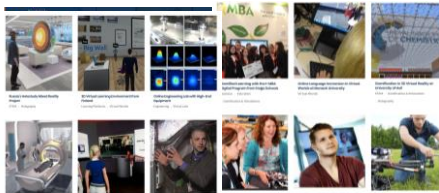
How Learning is Changing: Mega Trend #1. Learner Engagement



70

Simulations in Virtually Inspired Learning is More Digital and Resource Rich

<https://virtuallyinspired.org/portfolio/online-engineering-lab-with-high-end-equipment/>



71

May 30, 2019 Center for Medical Simulation Learning is More Digital and Resource Rich

<https://harvardmedsim.org/>
<https://harvardmedsim.org/training/clinical-training/>



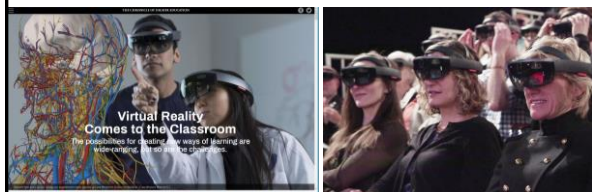
72

May 28, 2020**Virtual Reality Comes to the Classroom, Beth****McMurtrie, The Chronicle of Higher Education**<https://www.chronicle.com/interactives/20190528-ImmersiveTech>

Video (17 seconds): A virtual reality experience for students in a computer class. <https://www.chronicle.com/interactives/20190528-ImmersiveTech>

Video (13 seconds): A group of students could gather around a virtual heart. <https://www.chronicle.com/interactives/20190528-ImmersiveTech>

Additional Video (17 seconds): Hamilton College literature students built virtual worlds based on novels and stories they read in class.



73

July 28, 2017**Scenario-Based Learning and Challenges****Learning is More Immersive****Modern medicine breathes new life****into virtual training**<https://www.usmh.edu/news/clinical-tech/2017/07/28/modern-medicine-breathes-new-life-into-virtual-training/20170728/>**Videos**

2:34 (entire video) <http://cutbook.com/vr-medicine.html>
 03:21 <http://cutbook.com/vr-medicine.html>
 37:56 <http://cutbook.com/vr-medicine2.html>
 57:28 <http://cutbook.com/vr-medicine3.html>
 1:30-2:27 <http://cutbook.com/vr-medicine4.html>



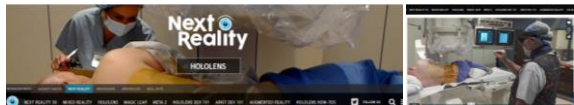
74

July 19, 2017**Learning is More Immersive****HoloLens Assists in Live Surgery****Tommy Palladino, Next Reality**<http://www.nextreality.com/news/2017/07/19/holo-lens-assists-in-live-surgery-42288/>Video #1: 1:09: <http://cutbook.com/holo-lens.html>Video #2: 1:37: <http://cutbook.com/holo-lens2.html>

07/19/2017

Nonlinear experience out of doctors and patients using HoloLens to plan surgery. The device has been used to show reference images, display a simulation, and provide a 3D model of the patient's anatomy. It has been used to improve the

Original Video: <http://hololens.mayoclinic.org/news/holo-lens-assists-in-live-surgery-42288/>



75

July 17, 2017**Learning is More Immersive****Learning Chemistry in Virtual Reality,****Sarah Hardman, New Learning Times**<https://newlearningtimes.com/article/4519/learning-chemistry-in-virtual-reality>1:38 video: <https://hololens.mayoclinic.org/news/2017/07/19/holo-lens-assists-in-live-surgery-42288/>AR: <http://cutbook.com/chemistry-vr.html>AR: <http://cutbook.com/chemistry-vr2.html>AR: <http://cutbook.com/chemistry-vr3.html>AR: <http://cutbook.com/chemistry-vr4.html>

76

January 29, 2020**Learning is More Immersive****Emergency Worker VR Training****No smoke, no water, no waste. VR could train the next generation of firefighters****Nell Lewis, CNN Business**<https://www.cnn.com/2020/01/29/tech/virtual-reality-firefighter-training/index.html><https://news.iu.edu/technology/2020/03/19/virtual-reality-firefighter-training/>

Firefighter trainees from the Cosumnes Fire Department are taught how to handle specific scenarios while wearing VR headsets.

The FLAIM Systems simulator recreates the whole experience, from the visual scenario to the likely temperature. A grassfire scenario in virtual reality, created by FLAIM Systems.

77

January 20, 2017**Learning is More Immersive****You VR Takes You on a Tour of The Human Body**https://www.youtube.com/watch?v=LRWajlf_UJM

78

May 28, 2019

Virtual Reality Comes to the Classroom

Beth McMurtrie, The Chronicle of Higher Education
<https://www.chronicle.com/interactives/20190528-ImmersiveTech>
 A virtual-reality experience for students in a conducting class: <http://curtbonk.com/virtual-c.html>
 A group of students could gather around a virtual heart: <http://curtbonk.com/virtual-h.html>



Unlike VR headsets, augmented-reality glasses allow users to see the world around them, opening up possibilities for shared learning experiences. A group of students could gather around a virtual heart as their professor takes it apart to show them the components. (Microsoft)

79

September 5, 2017

Learning is More Immersive

Get ready for thousands of augmented reality Apple apps

Jefferson Graham, The USA Today

AI Pets (.34): <http://curtbonk.com/arkit.html>
 Meal (30 seconds): <http://curtbonk.com/arkit2.html>



The Food Network's app will be updated for AR in the new version of IOS11. (Photo: Food Network)

80

June 12, 2019

Learning is More Game-Based

Your doctor may be playing medical video games at work. That could be good for your health
 Edward Baig, USA Today

<https://www.usatoday.com/story/tech/2019/06/12/medical-video-games-education-healthcare/4670000002/>
 1:59 (video medical training): <http://curtbonk.com/medical-video-games.html>



81

January 23, 2020

Learning is More Game-Based

Coronavirus Outbreak Causes Surge In

Plague Inc Downloads

Lara Jackson, Gamebyte

<https://www.gamebyte.com/news/coronavirus-outbreak-causes-surge-in-plague-inc-downloads/>



82

May 30, 2019

Simulation Center, IUPUC

Learning is More Hands-On

The IUPUC Simulation Center is one of only 100 labs in the world to be fully accredited by the Society for Simulation in Healthcare
<https://www.iupuc.edu/about/simulation-center/index.html>



83

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-your-guide-to-the-biggest-consumer-electronics-show/400774001/>



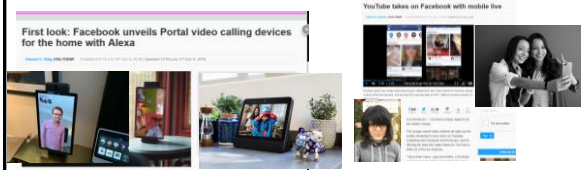
The Octopus watch from Joy, an icon-based watch for kids to have good habits is on display during CES.

84

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/2018/10/8/17233381/facebook-portal-alexa>
<http://cortbook.com/facebook-portal.html>
<https://www.usatoday.com/story/tech/2017/02/07/youtube-takes-facebook-mobile-live/32566592/>



85

June 5, 2018**Learning is More Collaborative**

Chatterbox: Master a Language, Change a Life
Mursal Hedayat, London

<https://www.youtube.com/watch?v=3K3Vendao0>

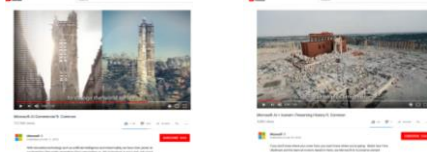


86

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=9uCY72hbe4J> (Feb 11, 2018)
 Video 1:46: Microsoft AI: Amplifying Human Ingenuity <https://www.youtube.com/watch?v=r02mu723W9o>
 Video 1:00: Microsoft AI: Empowering Innovators ft. Common <https://www.youtube.com/watch?v=250WadA37hw> (April 22, 2018)
 Video 1:50 Microsoft AI + Xconeme: Preserving History ft. Common <https://www.youtube.com/watch?v=ZDZj3uHMSM> (April 22, 2018)
 Video 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common <https://www.youtube.com/watch?v=7rouf4Gt8t0> (April 22, 2018)



87

May 1, 2018**Learning is More Immersive**

3 ways districts can use AR and AI

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



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

88

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

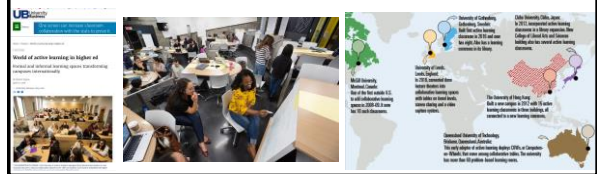


89

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>



90

December 9, 2019 Learning is More Free The Free-College Fantasy

Kevin Carey, The Chronicle of Higher Education
<https://www.chronicle.com/interactives/20191209-FreeCollege>



The Free-College Fantasy

The proposals floated by presidential candidates are nonsensical. There's a better way.

91

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

The number of faculty members choosing open educational content (OER) to replace their legacy textbooks is growing.



OpenStax Saved 1 Million Students \$70 Million

By Matt Kahaner | 17 August 2017



Open Textbook Network

WE ARE A COMMUNITY DEDICATED TO RESKITS

600+ Courses represented

\$8.5 Million in student savings by OTN members

45% of faculty who attend an OTN workshop adopt an open textbook

92

August 2, 2018 Learning is More Free and Open OpenStax Infographic

https://csh.usc.edu/otn/news-network/news-network-ica.edu/doi/10.1215/00141801/infographic-2018_Fall-2310000.pdf



93

July 22, 2019 Learning is More Audio-Based Defense Health Agency (DHA)

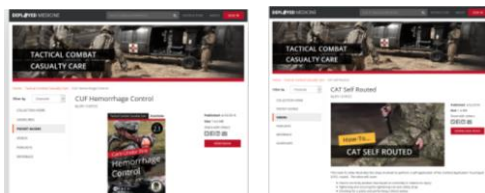
<https://deployedmedicine.com/milnet/11/content/20>



94

March 22, 2012 Learning is More Video-Based Defense Health Agency (DHA)

<https://deployedmedicine.com/milnet/11/content/20>



95

January 23, 2020 Learning is More Video-Based

Coronavirus: UK-made 'Plague' game downloads soar in China amid virus outbreak
Sky News, UK

<https://news.sky.com/story/coronavirus-uk-made-plague-game-downloads-soar-in-china-amid-virus-outbreak-11512574>

Whole video: <http://curtbank.com/corona.html>

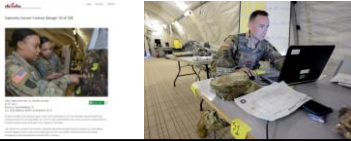
First 25 seconds: <http://curtbank.com/corona-25.html>

First 58 seconds: <http://curtbank.com/corona-58.html>



96

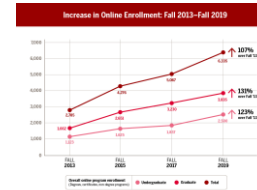
May 7, 2019
Learning is More Online
Simulated Natural Disaster Field Training Exercise
Captains Career Course
<https://www.dvidshub.net/image/5343668/captains-career-course>



97

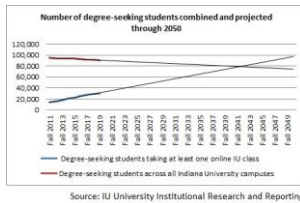
December 2019
Learning is More Online

IU Online Newsletter
 Fall 2019 shows continued online growth
<https://teachingonline.iu.edu/about/newsletter/articles/191220-fallcensus.html>
 A word from the director
<https://teachingonline.iu.edu/about/newsletter/articles/191220-foley.html>



98

November 10, 2019
Learning is More Online
IU online enrollment on significant upswing
Michael Reschke, Herald Times



99

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.

100

July 29, 2018
Learning is More Synchronous
Why Silicon Valley is teaming up with San Quentin to train young people to code
Jessica Guynn and Megan Diskin, USA TODAY
<https://www.usatoday.com/story/tech/2018/07/25/california-youth-learning-code-prison-help-san-quentin-jonatan/1810122002/>
 Video (1:44) <http://courtbok.com/san-quentin.html>

Why Silicon Valley is teaming up with San Quentin to train young people to code



101

January 1, 2018
Learning is More Synchronous
Indiana doctor finds perfect fit with virtual assistant, Allen Laman, The Dubois County Herald (Jasper, Indiana)
<http://duboiscountyherald.com/h/doctor-finds-perfect-fit-with-virtual-assistant>



Live Healthcare Virtual Assistant Joanna Fajardo of Bulacan, Philippines, took medical notes in a checkup for Mike Andrews of Cannelburg with Dr. Timothy Barry of Jasper on Tuesday afternoon at Family Foot & Ankle Care in Jasper.

102

September 25, 2017

Learning is More Direct from Experts

**Professors Have Taken Over the MOOCs:
How open online learning is changing**

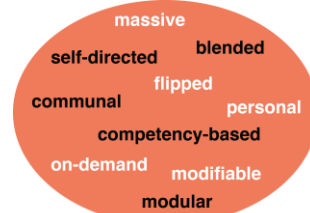
Joshua Kim, Inside Higher Ed

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



103

How Learning is Changing: Mega Trend #3. Customization



104

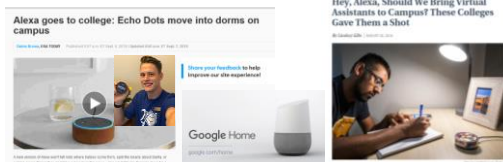
August 2, 2018

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/246129>



105

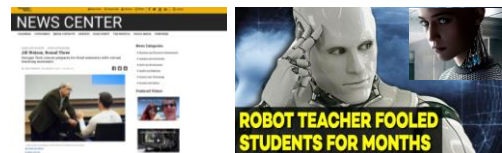
January 9, 2017

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
Bot teacher that impressed and fooled everyone, Donald Clark, Plan B

<http://www.uncomputing.org/>

<http://donaldclarklab.blogspot.co.uk/2015/11/2/bot-teacher-that-impressed-and-fooled.html>



106

January 29, 2020

Learning is More On-Demand

Arizona State University students embrace and profess their love to a chatbot named Sunny

Rachel Leingang, Arizona Republic

<https://www.azcentral.com/story/news/education/2020/01/29/asu-students-embrace-chatbot-sunny/5166666002/>



107

June 19, 2019

Learning is More On-Demand

DeepZen will allow authors to turn ebooks into audiobooks

Michael Kozlowski, Good e-Reader

Deep Zen, IBM

<https://deepzen.io/>

1) <http://curtbonk.com/deepzen1.html>


2) <http://curtbonk.com/deepzen2.html>



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-ux-future-ux-people-automating-new-search-tool-will-answer-our-questions-for-reading-thousands-of-books/>



The image shows a screenshot of the 'Talk to Books' website on the left, which features a search bar and various icons. On the right, there is a photograph of a presentation stage with a large screen displaying the 'Talk to Books' logo and a speaker at a podium.

109

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

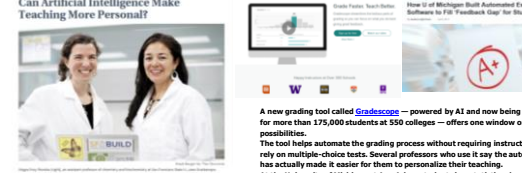


The image is a screenshot of a presentation slide titled 'Indiana's Active Learning Module Expansion'. It features three photographs of modern, open-plan learning environments with large windows, comfortable seating, and collaborative workspaces. Text on the slide describes the expansion of these spaces to support various learning styles.

110

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?



The image shows a screenshot of a presentation slide. On the left, there is a photo of two women, Goldie Blumenstyk and another individual. The main text discusses a new grading tool called 'Gradescope' powered by AI, which is used by over 175,000 students at 550 colleges. It highlights how the tool automates the grading process and allows for personalized teaching. A small graphic of a lightbulb with a plus sign is also visible.

111

September 10, 2019
The Future of Learning, Transforming Access
Simon Nelson, CEO, FutureLearn, PCF9 Conference, Edinburgh, Scotland



The image is a presentation slide with a yellow background. It features a large lightbulb icon. The text reads: 'MOOCs were only one part of a wider market shift' and '... but have been the catalyst for major innovation in HE'. A small portrait of Simon Nelson is in the top right corner.

112

September 10, 2019
The Future of Learning, Transforming Access
Simon Nelson, CEO, FutureLearn, PCF9 Conference, Edinburgh, Scotland

What's the future of digital learning?




The image shows a presentation slide with a dark blue background and a globe. The text states: '13.9 million new students per year until 2030' and '700 new universities needed EACH YEAR to meet demand'. A small portrait of Simon Nelson is in the top right corner.

113

September 9, 2019
Asha Kanwar, President and CEO, Commonwealth of Learning (COL), PCF9 Conference, Edinburgh, Scotland

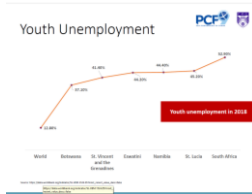
Inclusion



The image is a presentation slide with a white background. It features a list of statistics: '186 million disabled children have not completed primary school', '90% disabled children are out of school in developing countries', and 'Access to tertiary education for people with disabilities is 3%'. At the bottom, there is a graphic showing a person in a wheelchair and two children holding hands. The PCF9 logo is in the top right corner.

114

September 9, 2019
Asha Kanwar, President and CEO, Commonwealth of Learning (COL), PCF9 Conference, Edinburgh, Scotland



115

September 10, 2019
The Future of Learning, Transforming Access

Simon Nelson, CEO, FutureLearn, PCF9 Conference, Edinburgh, Scotland
 And the threat of AI and automation is very real. A 2017 report by McKinsey found that half of all current work activities could be automated, using technology that already exists. and that by 2030 anywhere from 75 million to 375 million workers worldwide will be displaced from their old jobs and require retraining.



116

September 10, 2019
Learning is More Massive
The Future of Learning, Transforming Access

Simon Nelson, CEO, FutureLearn, PCF9 Conference, Edinburgh, Scotland
 (That would require around 13 new universities to be built each week, each serving 20,000 students, if they were all to be educated in person. That is obviously unfeasible.)



117

September 10, 2019
Learning is More Massive
The Future of Learning, Transforming Access

Simon Nelson, CEO, FutureLearn, PCF9 Conference, Edinburgh, Scotland



118

December 17, 2019
Learning is More Massive

Online Degrees Slowdown:
A Review of MOOC Stats and Trends in 2019
Dhawal Shah, Class Central

<https://www.classcentral.com/report/moocs-stats-and-trends-2019/>



By the Numbers: MOOCs in 2019

119

December 17, 2019
Learning is More Massive

Online Degrees Slowdown:
A Review of MOOC Stats and Trends in 2019
Dhawal Shah, Class Central

<https://www.classcentral.com/report/moocs-stats-and-trends-2019/>



By the Numbers: MOOCs in 2019

120

21

December 16, 2019
2020 Impact Report, edX
<https://www.edx.org/sites/default/files/2020-impact-report.pdf>



127

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/Articles/2018/10/12/edX-expands-micro-masters-with-data-science-digital-leadership-and-more.aspx>
 Lindsey McDevide, Inside Higher Ed
<https://www.insidehighered.com/news/2018/10/12/edX-expands-micro-masters-with-data-science-digital-leadership-and-more.aspx>

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



128

October 3, 2019
Learning is More Modular
Google IT Professional Certificates
Coursera Blog

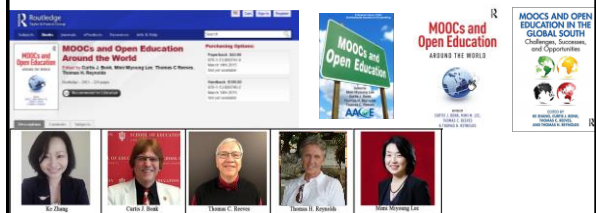
<https://www.google.com/edu/articles/coursera-google-it-professional-certificates-61263>
 Video: Malinda Williams, Aspiring IT Support Specialist (2:57)
<https://www.youtube.com/watch?v=1273xwH9Z28>
<https://blog.coursera.org/looking-back-at-the-first-years-impact-of-the-google-it-support-professional-certificates/>



129

MOOCs and Open Education
(book projects)

<http://moocsbook.com/>



130

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



131

WHAT'S NEXT

132

January 2, 2020
AI in 2020 and beyond:
create a digital replica of your aging parent
or yourself
Edward C. Baig, USA Today

<https://www.informationweek.com/stories/tech/2020/01/02/ai-in-2020-and-beyond-ai-digital-replica-of-your-aging-parent-or-yourself>
<https://www.usatoday.com/story/tech/2020/01/02/ai-in-2020-and-beyond-ai-digital-replica-of-your-aging-parent-or-yourself/461335666>



133

November 19, 2019

The Technology 202
Washington Post
By 2025, there will be over 80 billion connected to the
Internet, transmitting a tremendous amount of data.
(Source: Charter Spectrum Network)



134

September 6, 2019
Chatting with Chatbots
Lindsey McKenzie, Inside Higher Ed

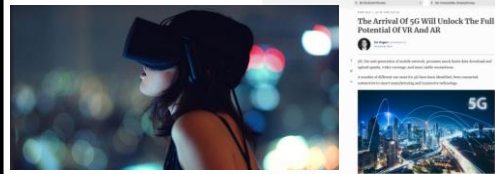
<https://www.insidehighered.com/news/2019/09/06/expansion-chatbots-higher-ed>



135

January 30, 2020
The Arrival Of 5G Will Unlock The Full Potential Of
VR And AR
Sol Rogers, Forbes

<https://www.forbes.com/sites/solrogers/2019/01/30/the-arrival-of-5g-will-unlock-the-full-potential-of-vr-and-ar/#15c0d0479cc>



136

November 26, 2019
Russian cows get virtual-reality glasses to help them
ward off winter blues
Oliver Carroll, Moscow, Independent

<https://www.independent.co.uk/news/world/europe/russian-cows-virtual-reality-glasses-winter-blues-a9218561.html>



137

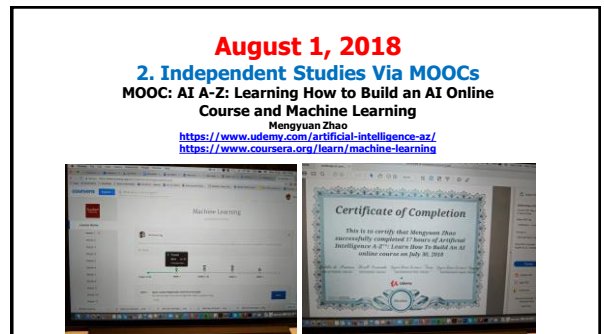
November 19, 2020
Technology Tomorrow
Washington Post
By 2025, there will be over 80 billion devices
connected to the Internet (Washington Post, Source:
Charter Spectrum Network)



138



139



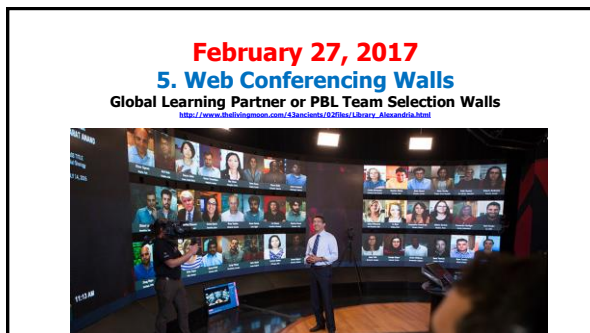
140



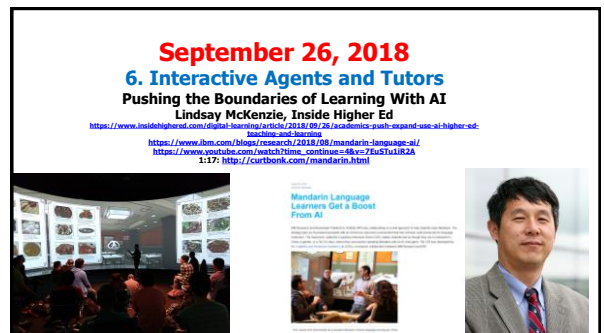
141



142



143



144

January 30, 2017**7. Professor Einstein PDA's**<http://www.usatoday.com/story/tech/2017/01/28/robotic-bac-life-now-serving-rally-fun/95888786/>

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-bac-life-now-serving-rally-fun/95888786/>

145

February 27, 2017**8. Robot Collaborators/Partners**<http://www.theverge.com/434824/robot-collaborators-partners>

146

November 8, 2019

Hey, Alexa: Can a robot with AI or your voice assistant help you feel less lonely?

Edmund C. Baig, USA Today

<https://www.usatoday.com/story/tech/2019/11/08/alexa-google-assistant-ai-robots-become-substitute-friends/4057885002/>

Helping a lonely kid who can't get to class

Stoneman startup: Its talking bot made it to rescue to solve the loneliness problem through what it refers to as "soft technology."



Hey, Alexa: Can a robot with AI or your voice assistant help you feel less lonely?

Edmund C. Baig, USA TODAY



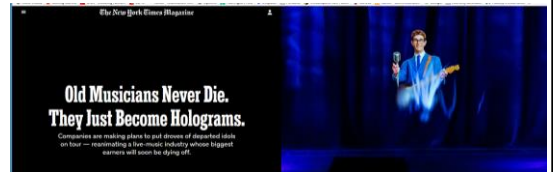
147

January 7, 2020**9. Talking to Dead People**

Old Musicians Never Die. They Just Become Holograms

Mark Binelli, The New York Times

<https://www.nytimes.com/2020/01/07/magazine/hologram-musicians.html>



148

August 29, 2019

'Hey, Google! Let me talk to my departed father.'

Peter Holley, The Washington Post

<https://www.washingtonpost.com/technology/2019/08/29/hey-google-let-me-talk-my-departed-father/>

On the left, a photo of a man (Peter Holley) and on the right, a photo of a woman (Holley's mother).

'Hey, Google! Let me talk to my departed father.'

Will the rise of virtual beings be the next step in the human quest for immortality?



149

10. Instructional Designer Morphs into Learning Environment Engineer

The New and Improved Instructional Designer



150

Poll:
Evolution or Revolution?



151

April 23, 2015
Are We Living In a Learning Revolution?

Beth Wisch eLearning Industry
<https://elearningindustry.com/living-elearning-revolution>



152

Not Me...I am happy!
and...
My minions are happy!



153

We are entering a jumping off point...

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



154

Things are heating up!




155

The Learning Revolution is coming within reach!



156

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



20/20 VISION

157

Any Questions or Comments?

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



158