Technology Today, Technology Tomorrow: Might Learning Evolutions lead to Learning Revolutions?
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Talk Overview
1. Technology Yesterday
2. Technology Today
   30 ways learning is changing...
3. Technology Tomorrow and Future Trends

The Evolution of E-Learning (All 7 year cycles)
Phase I, 1994:
THE AGE OF PORTALS AND PAGES (NETSCAPE GOES PUBLIC).
Phase II, 2001:
THE AGE OF OPENNESS (MIT OCW & WIKIPEDIA BORN).
Phase III, 2008:
THE AGE OF MOODIS (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.

April 23, 2015
Are We Living In An eLearning Revolution?
Beth Wisch eLearning Industry
https://elearningindustry.com/living-elearning-revolution

April 30, 2017
‘Those Jobs Are Gone’
Steve Kolowich, The Chronicle of Higher Education

November 28, 2017
Automation could kill 73 million U.S. jobs by 2030
Paul Davidson, USA Today
March 29, 2017
Every industrial robot takes up to 6 jobs, study finds
Steve Goldstein, MarketWatch

Part 1: Technology Yesterday

Poll: Remember Education 1.0
1728: 1st correspondence course advertised Boston
The First University Correspondence Course
(University of London, External Program, 1858)
1728-1990s – Generally postal system based

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

Winky Dink and ... Bill Gates?,
Bob Greene, March 31, 2013, CNN
A girls uses her “Winky Dink” drawing kit to draw on a TV screen as they watch the 1950s kids program.
Correspondence, Mail, Satellite, Radio, and TV Courses
Charles Wedemeyer, University of Wisconsin

How Might Video Games Be Good for Us?
Jane McGonigal, October 15, 2012, BQO
https://www.bigquestionsonline.com/content/how-might-video-games-be-good-for-us

Artificial Intelligence
John McCarthy, Stanford AI Lab
http://www.amazon.com/Machines-Loving-Grace-Common/dp/0062266683

Intelligence Augmentation and Amplification
Douglas Engelbart’s “The Mother of All Inventions” (1968)
Augmentation Research Center (ARC)
http://www.amazon.com/Machines-Loving-Grace-Common/dp/0062266683

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

June 3, 2017
How PLATO changed the World...in 1960
Cait Etherington, ElearningInside News
PLATO—an acronym for Programmed Logic for Automatic Teaching Operations.
Poll: Anyone remember these technologies?

May 10, 2013
10 ed-tech tools of the 70s, 80s, and 90s
eSchool News, Meris Stansbury
http://www.eschoolnews.com/2013/05/10/10-ed-tech-tools-of-the-70s-80s-and-90s/

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

August 6, 2016
The Web is 25!
Happy (sort of) birthday, World Wide Web!,
Erica Fink and Jonathan Tortora, CNN Money (Tech)
http://info.cern.ch/ (First website)
http://info.cern.ch/hypertext/WWW/TheProject.html

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

April 4, 2016
MIT OpenCourseWare is 15!
http://ocw.mit.edu/about/15-years/
**Fast Forward 30+ Years...**

“Anyone can now learn anything from anyone at any time.”

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**July 11, 2017**

Going “phigital?” 4 things schools need to know about Generation Z, Todd Kominiak, TrustEd

[May 15, 2017](http://trustedk12.com/phigital-digital-learning/)

3 must know’s about the rising “phigital” student and why their impact is enormous, Meris Stansbury, eCampus News

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**Part II. Technology Today**

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

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**30+ Ways Learning is Changing: The Mega Trends**

Learner Engagement

Pervasive Access

Customization & Personalization

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

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

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**August 31, 2016**

Learning is More Mobile

Samsung ticks forward with new Gear S3 smartwatch

Edward C. Baig and Eli Blumenthal, USA TODAY


Samsung Pay on the Gear S3. (Photo: Eli Blumenthal, USA TODAY)

Samsung is hoping to have 10,000 apps by the time the Gear S3 launches this fall.
January 3, 2018
Learning is More Mobile
CES 2018: Your guide to the biggest consumer electronics show
USA Today

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

May 15, 2018
Learning is More Mobile
Sony Digital Paper
https://www.sony.com/electronics/digital-paper/notepads/dpt-rp1

September 27, 2016
Learning is More Visual
Snapchat's Spectacles expected to be big hit, Jefferson Graham, USA Today
The company announced a rebrand along with new sunglasses that can record footage. Video provided by Newsy Newlook

January 2, 2018
Learning is More Visual
5G to AR: Here are 7 technologies to watch in 2018
Edward C. Baig, USA Today
Face ID takes less than a minute to set up. In practice, it works better than expected, but it's not perfect

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=9tucY7Jhhs4 (Feb 11, 2018)
Video 1:48: Microsoft AI: Amplifying Human Ingenuity: https://www.youtube.com/watch?v=NDmu7Z5NPXo
Video 1:00: Microsoft AI: Empowering Innovators ft. Common: https://www.youtube.com/watch?v=Z5OWdqfAYfw (April 22, 2018)
Video: 1:00: Microsoft AI + Iconem: Preserving History ft. Common: https://www.youtube.com/watch?v=ZDZjaIhzMSM (April 22, 2018)

March 24, 2012
Learning is More Digital and Resource Rich
In South Korean classrooms, digital textbook revolution meets some resistance, Washington Post

In South Korean classrooms, digital textbook revolution meets some resistance.
April 17, 2018

Learning is More Ubiquitous
Massive work of ‘sentient art’ unveiled at Luddy Hall is also a learning tool for students
Indiana University

July 28, 2016

Knod
Learning is More Hands-on
(Per Dr. Michael Mayrath: work with employers to diagnose skills gaps, then provide a platform to deliver content to build those skills in a learn by doing experiences, real projects with employers)
https://www.knodd.com/

September 5, 2017

Learning is More Immersive
Get ready for thousands of augmented reality
Apple apps
Jefferson Graham, The USA Today
AI Pots (.34): http://curtbonk.com/arkit.html
Meal (30 seconds): http://curtbonk.com/arkit2.html

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-amazing-ways-our-district-is-using-ar-and-vr/

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-amazing-ways-our-district-is-using-ar-and-vr/

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

July 19, 2017

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

Video #1: 1:09: http://curtbonk.com/hololens.html

HoloLens Assists in Live Surgery
Numerous examples exist of doctors and surgeons using HoloLens to plan surgeries. The device has even been used to view reference images during a procedure and stream it to a remote audience. Until recently, it has not been used to augment the surgeon’s view of the patient during a live surgery.

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.
May 30, 2017
Learning is More Immersive
Fly above the water with Oracle Team USA in 360
https://youtu.be/9nZhz30QIZQ
The first 17 seconds: http://curtbonk.com/sailing-17.html
1:14 to 1:54: http://curtbonk.com/sailing-40.html
Whole video: http://curtbonk.com/sailing.html

July 19, 2017
Learning is More Immersive
Modern medicine breathes new life into virtual training
Videos
27-56: http://curtbonk.com/vr-medicine2.html

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

March 21, 2018
Chatterbox
Learning is More Global
The overall winner in the competition was Chatterbox, an online language school powered by refugees
https://wearechatterbox.org/

July 21, 2016
Learning is More Pervasive
Facebook’s Aquila drone completes first test flight
Jessica Guynn, USA Today
An aerial view of Aquila, a autonomous aircraft Facebook is designing to deliver mobile broadband networks to isolated people (mission to fly 60,000 above Earth for up to 3 months at a time; current record for solar-powered unmanned flight is 2 weeks). (Photo: Facebook)
May 10, 2017
Learning is More Online (Access)
50-year-old Bible college in Colorado Springs to sell campus, switch to online-only instruction, Debbie Kelley, The Gazette

September 21 and November 12, 2017
Learning is More Immediate...
Scientists just discovered the first brainless animal that sleeps
Sara Kaplan, Washington Post

June 14, 2016
Learning is More Video-based
Microsoft to Acquire LinkedIn for $26.2 Billion, Jay Greene, CNN Money

Remember: "The world is really open to learning"
Learning is More Open
The Fourth Industrial Revolution
http://trainingshare.com/twio-clip.php

June 20, 2016
Learning is More Free and Open
Coursera on a Mission to Help Refugees
Lauren Camera, US News and World Report

June 7, 2016
Teaching refugees how to code, CNN Money
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/

February 27, 2017
Learning is More Self-Directed
The LMS Market is Quickly Losing Ground
Carol Leaman, CLO
https://www.openlearning.com
https://www.openlearning.com

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

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

How Learning is Changing:
Mega Trend #3. Customization
massive self-directed flipped
communal personal competency-based
on-demand modifiable modular

January 2, 2018
Learning is More Personal
5G to AR: Here are 7 technologies to watch in 2018, Edward C. Baig, USA Today
(e.g., Augmented hearing)
I was very surprised by the results. They sent me examples of translations into English translation:

• "respirar" powered by AI and now being used all semester was "tú hasta fuera"

In contrast, Google (PDAs) and Elizabeth Weise, USA Today offers one window on the English version of Google Translate's

• "Si yo cobrara un cure por respirar" for breathing. The consequences will soon be reflected. health care, unlike acute disease, once the recipe to treatment, the consequences will soon be reflected.

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• "respirar" powered by AI and now being used all semester was "tú hasta fuera"

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June 7, 2017
Learning is On Demand
Personal Digital Assistants (PDA)
Questions: How will PDA's work in education? Who builds them? And who decides the functions?

May 9, 2018
Learning is More On Demand
Google Duplex Demo from Google IO 2018
Video (4:11): https://www.youtube.com/watch?v=KtE1Fo5Eyi0
Donald Clark Plan B
https://donaldclarkplanb.blogspot.ca/2018/05/google-just-announced-ai-bot-that-could.html?m=1

April 17, 2017
Learning is More Blended
Facebook’s future will blend physical and digital worlds
Jessica Guynn, USA Today

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

March 6, 2018
Learning is More Competency-Based
Degreed gets $42M to help build a tool to help employees learn the right skills
Matthew Lynley, TechCrunch

March 21, 2018
Learning is More Massive
Biz Nation
EdTech startup focused on empowering youth with technology skills, soft skills, entrepreneurship and financial intelligence through a methodology that improves user's learning about creating a business.
October 30, 2017
Learning is More Massive
Report: 59% of employed data scientists learned skills on their own or via a MOOC
Alison DeNisco Rayome

June 15, 2017
Learning is More Massive
MOOCs for Credit
Class Central
https://www.class-central.com/report/moocs-for-credit/

May 11, 2018
Learning is More Massive
MOOCs Are Not the Social Mobility Tool We Hoped For
Sara Hardman, New Learning Times

July 28, 2016 (Customization)
Learning is More Modular
Udemy: "Get cozy with a class"
https://www.udemy.com/

December 17, 2017
Learning is More Massive
Woz U Has Made Some Big Promises. Can It Deliver?
Henry Kronk, ElearningInside News
https://news.elearninginside.com/woz-u-made-big-promises-can-deliver/

September 21, 2016
Learning is More Modular
Udacity Unveils Nanodegree Program for Self-Driving Car Engineers
Sri Ravipati, Campus Technology
30+ Ways Learning is Changing: Recapping the Three Mega Trends: Engagement, Access, and Customization

The Future of Learning Plague
The new "Four Horsemen" of the Apocalypse:
Quality, Copyright, Plagiarism, and Assessment...

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

April 8, 2018
How Ed Tech Is Exploiting Students
Chris Gilliard, The Chronicle of Higher Education

August 4, 2017
When our smartphones leave us out of touch
Brett Molina, USA Today
January 14, 2018
Facebook invites you to live in a bubble where you’re always right
Callum Borchers, The Washington Post

May 17, 2018
Will Google Duplex Evolve Into a Virtual Teaching Assistant?
Joshua Kim, Inside Higher Ed
https://www.insidehighered.com/blogs/technology-and-learning/will-google-duplex-evolve-into-a-virtual-teaching-assistant

May 14, 2018
“Superior Intelligence.” How Frightened Should We Be of A.I.?
Tad Friend, The New Yorker
https://www.newyorker.com/magazine/2018/05/14/how-frightened-should-we-be-of-ai

June 2018
How the Enlightenment Ends
Henry A. Kissinger, The Atlantic
May 11, 2018
Humanoid robot runs through the park by itself
Lisa Fischer, CNN Tech

January 30, 2017
1. Professor Einstein PDA's
http://www.youtube.com/watch?v=SM70sXZVzK8
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)

February 27, 2017
2. World Knowledge Refreshment Stations
http://www.thelivingmoon.com/43ancients/02files/Library_Alexandria.html

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

December 21, 2017
A Robot Goes to College
Lindsay McKenzie, Inside Higher Ed
A robot developed by Taiwan engineers moves chess pieces on a board against an opponent at the 2017 Consumer Electronic Show (CES) in Las Vegas, Nevada. (Photo: Rob Lever, AFP/Getty Images)

January 3, 2018
CES 2018: Your guide to the biggest consumer electronics show
USA Today
June 15, 2017
A New Class Of Robots Could Actually Help Identify Training And Employment Opportunities
Gordon Freedman, Forbes

January 2, 2018
5G to AR: Here are 7 technologies to watch in 2018
Edward C. Baig, USA Today

June 13, 2017
How Human is Too Human for Robots?
Sara Hardman, New Learning Times

March 14, 2016
Artificial Intelligence and Robots
Paul Basken, The Chronicle of Higher Education
http://chronicle.com/article/Behind-a-Computer-Surprise/235687?cid=at&utm_source=at&utm_medium=en&elqTrackId=b050021f79e64d299f78b827af837b4a&elq=9ab0ff65a0e940caa0943c7774346&elqaid=8231&elqat=1&elqCampaignId=2650

January 16, 2018
Robots are better at reading than humans
Brett Molina, The USA Today

March 24, 2017
Artificial Intelligence Market in the US Education Sector 2017-2021
Richard Chang, Campus Technology
June 3, 2016
4. Explosion of Virtual Reality
VR Lets Med Students Experience What It's Like To Be 74
Elyse Wanshel, Huffington Post
http://ht.ly/bSpe300XEPJ

September 4, 2017
Is virtual reality the next 3D TV? Like VR, it was hyped, pricey and consumers didn’t care
Edward C. Baig, The USA Today

Facebook Spaces is a new social VR hang out area that allows owners of Oculus Rift and Touch to interact in virtual reality. (Photo: Facebook)

February 27, 2017
5. Web Conferencing
Global Learning Partner or PBL Team Selection Walls

September 22, 2017
Henry Kronk, E-learning Inside News
https://theumlaut.com/binge-learning-is-online-education-s-killer-app-84da18f8ae76

7. Rise of Super E-Mentors

8. Café Classroom and Café Connectedness
9. Instructional Designer Morphs into Learning Environment Engineer

10. The Age of Personalization

March 28, 2017
11. Elon Musk’s Neuralink wants to plug into your brain, Marco della Cava, USA Today (includes 34 second video)

http://trainingshare.com/musk.html

April 25, 2018
12. Deliberate Innovation, Lifetime Education
Commission on Creative the Next in Education
Georgia Tech University, Office of the Provost

Poll: Evolution or Revolution?

Poll: Or does all this give you a headache?
Not Me...I am happy!
and...
My minions are happy!

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

Things are heating up!

The Learning Revolution is coming within reach!

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

Any Questions or Comments?
Slides at: TrainingShare.com
Papers: PublicationShare.com
Free book: http://tec-variety.com/
Email: cjbonk@indiana.edu