Education 20/20: A Learning Technology Evolution or Learning Technology Revolution?
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Talk Overview
1. Education 20/20
2. Technology Yesterday
3. Technology Today
   30 ways learning is changing...
   Megatrends of Learning:
   a. Engagement
   b. Access, and
   c. Customization
4. Technology Tomorrow and Future Trends

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

August 21, 2016
ST Future Economy Roundtable: Is Asia ready for the Fourth Industrial Revolution?
The Straits Times
http://www.straitstimes.com/asia/is-asia-ready-for-the-fourth-industrial-revolution

“IT’s quite clear that the established models of education have to change and adapt to the new environment.”
The Creation of Effective Learning Environments


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.

20 New Roles of the Instructor

Cultivator
Course Ambassador
Curator
Consumer Advocate
Concierge
Change Catalyst
Conductor
Camping Trip Guide
Cook
Comedian
Coach
Collaborator
Community Organizer
Chemist
Care Giver
Cultivator
Collaborator

Merrill’s First Principles of Teaching/Instruction

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

Integration
Application
Activation
Demonstration

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

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

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

6. The Principle of Choice and Options
   http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html

8. The Principle of Support and Feedback
   http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html

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

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

12. The Principle of Nontraditional Learning
    http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
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

16. The Principle of Expanded Resources
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html

The World is Open:
How Web Technology Is Revolutionizing Education

17. The Principle of Human Connectedness
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
Clearly…
Learning is Changing!

Part 1: Technology Yesterday

Correspondence, Mail, Satellite, Radio, and TV Courses
Charles Wedemeyer, University of Wisconsin

Intelligence Augmentation and Amplification
Douglas Engelbart's "The Mother of All Inventions" (1968)
Augmentation Research Center (ARC)

Winky Dink and ... Bill Gates?, Bob Greene, March 31, 2013, CNN

How PLATO changed the World…in 1960
Cait Etherington, ElearningInside News

How Online Learning is Changing Classroom Design

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

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


Engelbart's prototype of a computer mouse, as designed by Bill English from Engelbart's sketches.
May 10, 2013
10 ed-tech tools of the 70s, 80s, and 90s
eSchool News, Meris Stansbury
https://www.eschoolnews.com/449276.html
(May 10, 2013)

June 21, 2017
The Ed Tech Market Map: 90+ Startups
Building The Future Of Education
CB Insights, Research Briefs
(June 21, 2017)

July 11, 2017
Going ‘phigital?’ 4 things schools need to know about Generation Z, Todd Kominiak, TrustEd
May 15, 2017
3 must know’s about the rising “phigital” student-and why their impact is enormous, Meris Stansbury, eCampus News
https://www.ecampusnews.com/campus-administration/education-gen-z-phigital-student/
(July 11, 2017)

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

30+ Ways Learning is Changing:
The Mega Trends
Learner Engagement
Pervasive Access
Customization & Personalization

April 23, 2015
Are We Living In An eLearning Revolution?
Beth Wisch eLearning Industry
https://elearningindustry.com/living-elearning-revolution
How Learning is Changing:  
Mega Trend #1. Learner Engagement

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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  
[Link to article]

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.

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January 3, 2018  
Learning is More Mobile  
CES 2018: Your guide to the biggest consumer electronics show  
USA Today  
[Link to article]

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

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May 15, 2018  
Learning is More Mobile  
Sony Digital Paper  
[Link to article]

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February 7, 2017 (Engagement)  
Learning is More Social  
YouTube takes on Facebook with mobile live  
Jefferson Graham, USA Today  
[Link to article]
May 31, 2017
Learning is More Digital and Resource Rich
Enticing Students to Read Again
Ellen McCracken, The Chronicle of Higher Education
Digital Dubliners—a guide to Joyce's stories written for students by students, will bring a new reading experience to today's classroom.
http://www.chronicle.com/article/Enticing-Students-to-Read/144347

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 Newslook

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
https://www.youtube.com/watch?v=9tucY7Jhhs4 (Feb 11, 2018)
https://www.youtube.com/watch?v=NDmu7Z5NPXo
https://www.youtube.com/watch?v=Z5OWdqfAYfw (April 22, 2018)
https://www.youtube.com/watch?v=ZDZjaIhzMSM (April 22, 2018)
https://www.youtube.com/watch?v=7rzufxlGH4o (April 22, 2018)

July 28, 2016
Learning is More Hands-on
Knod
(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)
http://www.knod.net/

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

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

Earthshake, the first educational game for the NeRILLA system, teaches early physics principles through hands-on learning.
**Pros and Cons of Virtual Reality in the Classroom**

Adam Evans, The Chronicle of Higher Education

https://www.chronicle.com/article/ProsCons-of-Virtual/243016?cid=cp197

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**Pro:**

An art professor might virtually guide students in his rural-Kentucky classroom through an exhibit happening in Paris, allowing them not only to explore works of art but also to virtually hold and examine them up close.

A biology class might virtually travel down DNA strands previously visible only through a microscope.

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**Con:**

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

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

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**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/243016?cid=cp197

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**April 16, 2018**

Learning is More Informal

World of active learning in higher ed

Sherrie Negrea, University Business, May 2018

https://www.universitybusiness.com/article/world-active-learning-higher-ed

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**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


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**July 21, 2016**

Learning is More Ubiquitous

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

May 7, 2014 (Access)
Learning is More Global
CNA - Speaking Exchange (video chats)
https://www.youtube.com/watch?v=S-5EfwpFOk
FCB Brazil and the CNA language school network are launching the Speaking Exchange project, which connects CNA students in Brazil with Americans living in retirement homes.

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

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
This ancient shark with a snake head and 300 teeth is why we should just say nope to the ocean
Cleve R. Woodson, Jr., Washington Post
A Cassiopea jellyfish rests upside-down on black sand and pulses, rhythmically contracting and relaxing its bell. At night, Cassiopea jellies pulse less frequently — a clue that they're sleeping, researchers report. (Photo by JanEaster.com)
June 14, 2016
Learning is More Video-based
Microsoft to Acquire LinkedIn for $26.2 Billion,
Jay Greene, CNN Money

Microsoft to Acquire LinkedIn for $26.2 Billion

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

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

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

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/

May 4, 2016 (Access)
Learning is More Free and Open
This Mongolian Teenager Aced a MOOC
(140,000 people take the MIT MOOC on Circuits and Electronics, 1 of 300 to get a perfect score)
The Chronicle of Higher Education, Jeffrey R. Young
http://chronicle.com/article/This-Mongolian-Teenager-Aced-a/236362
May 19, 2016 (Access)
Learning is More Free and Open
From MOOC to bootcamp to MIT
MIT News, Office of Digital Learning
(Jin Wu--From MITx to MIT Global Entrepreneurship Bootcamp
to master's student)

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

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

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

January 14, 2018
Facebook invites you to live in a bubble
where you’re always right
Callum Borchers, The Washington Post
April 17, 2017
Learning is More Blended
Facebook’s future will blend physical and digital worlds
Jessica Guynn, USA Today

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

July 11, 2016 (Engagement)
Learning is More Personal
Smart Sparrow, Learning Design Studio
https://www.smartsparrow.com/case-studies/virtual-patients/

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

A new grading tool called Gradescope — powered by AI and now being used for more than 175,000 students at 550 colleges — offers one window on the possibilities. The tool helps automate the grading process without requiring instructors to rely on multiple assignment feedback forms. Teachers who use the tool say it has already made it easier for them to personalize their teaching.

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

At the University of Michigan at Ann Arbor, students in a statistics class last fall had their writing assignments evaluated by an automated text-analysis tool. And in 2016, some of the students in a computer science class at the Georgia Institute of Technology were surprised to learn that one of the TAs answering their questions remotely all semester was actually a chatbot powered by artificial intelligence.
April 8, 2018
Learning is More On Demand
What I Learned When My Students Used Google Translate
Diane Loyot, The Chronicle of Higher Education

• I was very surprised by the results. They sent me examples of translations into English from Albanian, Chinese, Kazakh, Russian, and Spanish. The translations from Albanian, Kazakh, Russian, and Spanish were good. They were not perfect, but the mistakes were such that, had I encountered the sentences in a student paper, I would have attributed them to grammatical errors on the part of the non-native speaker of English. Here is one of the Spanish examples:
  • Original Spanish: Si yo fuera tú, le cobraría hasta por respirar.
  • Google Translate’s English translation: If I were you, I’ll even charge you for breathing.
  • Accurate translation: If I were you, I would even charge him for breathing.

In contrast, Google Translate’s English version of a Chinese passage was unintelligible:
• But the second language acquisition is a steady process, if you take a care to do, that is, chronic diseases and even health care, unlike acute disease, once the recipe to treatment, the consequences will soon be reflected.

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

April 8, 2018
Learning is More On Demand
What I Learned When My Students Used Google Translate
Diane Loyot, The Chronicle of Higher Education

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April 8, 2018
Learning is More On Demand
What I Learned When My Students Used Google Translate
Diane Loyot, The Chronicle of Higher Education

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April 8, 2018
Learning is More On Demand
How Ed Tech Is Exploiting Students
Chris Gilliard, The Chronicle of Higher Education

• Eric Tornoe, a professor at St. Thomas University, in Minnesota, and his team members ran a lab with a demonstration of a technology that could guess, with reasonable accuracy, ages and genders of people in the room. Thinking about other applications of the technology Tornoe quickly landed on the potential information hidden within students’ emotions. He envisioned professors using that information to ensure that a greater percentage of their lecture material engaged students and stuck in their minds. Microsoft lent Tornoe’s team the facial recognition and emotion interfaces, free of charge, as well as the necessary software.

• Ashok K. Goel, a professor at the Georgia Institute of Technology, used IBM’s “Watson” technology to test a chatbot teaching assistant on his students for a semester. He told them the bot “Jill” with any questions but did not tell them that it was a bot.
March 21, 2018
Learning is More On Demand
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.
https://www.thebiznation.com/

June 15, 2017
Learning is More Massive
MOOCs for Credit
Class Central

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

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

May 11, 2018
Learning is More Massive
MOOCs Are Not the Social Mobility Tool We Hoped For
Sara Hardman, New Learning Times
https://techcrunch.com/2018/03/06/degreed-gets-42m-to-help-build-a-tool-to-help-employees-learn-the-right-skills/

March 6, 2018
Learning is More Competency-Based
Degreed gets $42M to help build a tool to help employees learn the right skills
Matthew Lynley, TechCrunch
https://techcrunch.com/2018/03/06/degreed-gets-42m-to-help-build-a-tool-to-help-employees-learn-the-right-skills/
September 21, 2016
Learning is More Modular
Udacity Unveils Nanodegree Program for Self-Driving Car Engineers
Sri Ravipati, Campus Technology

January 9, 2018
Learning is More on Modular
MIT launches MITx MicroMasters in Principles of Manufacturing
MIT Open Learning

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

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

January 30, 2017
1. 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)
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

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

March 14, 2016
Artificial Intelligence and Robots
Paul Basken, The Chronicle of Higher Education
http://chronicle.com/article/Behind-a-Computer-s-SurpriseVictory/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

Video (57 seconds): http://curtbonk.com/robots1.html

AI Market to Grow 47.5% Over Next Four Years
Richard Cheng, 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

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

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
Twenty-Four Seven Tutoring

8. Café Classroom and Café Connectedness

9. Instructional Designer Morphs into Learning Environment Engineer
Poll: Evolution or Revolution?

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

Things are heating up!

The Learning Revolution is coming within reach!

Remember...
“I cannot do this alone.”
“I cannot do this alone.”
“I cannot do this alone.”

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