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

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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. Future Trends and Ideas

(Circa Confucius 551–479 BCE)

November 28, 2017
Automation could kill 73 million U.S. jobs by 2030
Paul Davidson, USA Today

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
March 29, 2017
Every industrial robot takes up to 6 jobs, study finds
Steve Goldstein, MarketWatch
Video: .49-1:12: http://curtbonk.com/futureandroids2.html
Video: .01-.25: http://curtbonk.com/futureandroids4.html

April 30, 2017
Education 1.0
‘Those Jobs Are Gone’
Steve Kolowich, The Chronicle of Higher Education

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

July 29, 2016
Reimagine Your Learning Space: Starbucks Your Classroom!
Oskar Cymerman, Teaching Channel
http://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.
"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)
When did Elon successfully launch the SpaceX program?
Who admitted that launching the car into space was “kind of silly and fun”?
What are the things Tesla designed?
What were the things Tesla couldn’t determine the cause of?
How do you compare Elon Musk and Nicolas Tesla?
Why did Tesla build a plant in Colorado, not in New York?
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?
What are the things Tesla designed?
What were the things Tesla couldn’t determine the cause of?
Why did Tesla built a plant in Colorado, not in New York?
If he did not introduce the AC motor in the late 1880, what would have been the consequence?
Why did Tesla at first consider whether they were “electrical disturbances as are produced by the sun?”
How do you compare Elon Musk and Nicolas Tesla?
How is Mars different from Jupiter?

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/

April 13, 2016
The Fourth Industrial Revolution:
What it means, how to respond
Klaus Schwab, Founder and Executive Chairman, World Economic Forum
http://www.tubechop.com/watch/8280981

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

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

July 11, 2017
The Rise of the Phigital Learner
Going ‘phigital’? 4 things schools need to know about Generation Z, Todd Kominiak, TrustEd
https://www.ecampusnews.com/campus-administration/education-gen-z-phigital-student/
Clearly...
Learning is Changing!

20 New Roles of the Instructor
- Captain
- Course Ambassador
- Counselor
- Curator
- Conductor
- Concierge
- Consultant
- Camping Trip Guide
- Course Expedition Leader
- Community Organizer
- Chemist
- Care Giver
- Cultivator
- Collabag
- Consumer Advocate
- Change Catalyst
- Cook
- Comedian
- Coach
- Collaborator
- Care Giver

Merrill’s First Principles of Teaching/Instruction
- Integration
- Activation
- Application
- Demonstration

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

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

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

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

4. The Principle of Cheerfulness and Optimism
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html

5. The Principle of High Expectations
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
7. The Principle of Empowerment and Autonomy

[Image]

August 6, 2018
Why I'm Easy: On Giving Lots of A's
Gary Laderman, The Chronicle of Higher Education
August 8, 2017
Professor’s plan to let students grade themselves gets an F
Paul LeBlanc, CNN

8. The Principle of Support and Feedback

[Image]

9. The Principle of Spontaneity

[Image]

10. The Principle of Organization

[Image]

11. The Principle of Sharing

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

13. The Principle of Passion and Inspiration
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html

14. The Principle of Relevance and Meaningfulness
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 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 MODOC (FIRST MODOC OFFERED).

Phase IV, 2015:
THE AGE OF PERSONALIZATION.

Other prior significant dates:
1985: FIRST ONLINE COURSE, LINDA HAMASEM, UNIV. OF TORONTO
1987: HYPERCARD FIRST SHIPPED.
The World is Open: How Web Technology Is Revolutionizing Education

17. The Principle of Human Connectedness

18. The Principle of Cognitive Apprenticeship

19. The Principle of Purpose and Vision

20. ??? (what is missing)
Bonk's 20 "Last" Principles of Instruction  
(LAST = Learning Activation System Template)

Support and Feedback  
Convenience  
Spontaneity  
Collegiality  
Choice and Options  
Nontraditional Learning  
Passion and Inspiration  
Relevance and Meaningfulness  
Trial and Error (i.e., it’s ok to fail)  
Expanded Resources  
Human Connectedness  
Cognitive Apprenticeship  
Empowerment and Autonomy

Thirty Ways Learning is Changing...  
(i.e., it’s more informal, video-based, ubiquitous, collaborative, self-directed, global, mobile, open, massive, etc.)

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

30+ Ways Learning is Changing:  
The Mega Trends

Learner Engagement  
Pervasive Access  
Customization & Personalization

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

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

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.

July 24, 2018  
Learning is More Digital and Resource Rich  
This Physicist Wants Female Scientists To Get Noticed. So She Wrote 270 Wikipedia Profiles.  
Jenna Amatulli, Huffington Post

[Link to article]
August 4, 2017
Learning is More Mobile
When our smartphones leave us out of touch
Brett Molina, USA Today

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

April 22, 2018
Learning is More Visual
Microsoft AI Commercial ft. Common

May 14, 2018 (Engagement)
Learning is More Adventurous
Aaron Doering, Chasing Seals, TEDx

August 8, 2017
Learning is More Game-like
ShortSims

July 29, 2018
Learning is More Collaborative
Why Silicon Valley is teaming up with San Quentin to train young people to code
Jessica Guynn and Megan Diskin, USA TODAY
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, Lumilio 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 18, 2017

Learning is More Immersive
Google Expeditions Adds Augmented Reality for Classrooms

Google Expeditions Adds Augmented Reality for Classrooms

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

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

July 19, 2017

Learning is More Immersive
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.

Video #2: 1:37: http://curtbonk.com/thejournal38.html
38 Seconds
http://curtbonk.com/thejournal27.html
27 seconds
http://curtbonk.com/thelandmark.html
1: 10: http://curtbonk.com/thelandmark.html

When a teacher glances around her classroom, Lumilio 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 7, 2014 (Access)**

Learning is More Global
CNA - Speaking Exchange (video chats)

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.

**October 4, 2018 (Engagement)**

Learning is More Synchronous
Shindig, Future Trends Forum, Bryan Alexander
Anant Agarwal, CEO and founder of edX

Anant Agarwal, CEO and founder of edX will discuss the future of online education and the role of technology in shaping the learning experience.

**November 19, 2015 (Access)**

Learning is More Immediate...
New daddy longlegs named after 'Lord of the Rings' character Smeagol, Mary Bowerman, USA Today

A new species of daddy longlegs has been named after the character Smeagol from the "Lord of the Rings" series.

**November 1, 2017**

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

A new study from Indiana University shows a significant increase in the number of students taking distance education courses in the United States.
November 11, 2018
Meet the New Mega-University:
Can the fast-growing Southern New Hampshire U. transform higher education?
Goldie Blumenstyk, The Chronicle of Higher Education
https://www.chronicle.com/article/Meet-the-New-Mega-University/245049

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
http://curtbonk.com/link

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

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

September 17, 2018
Talk to Books
https://books.google.com/talktobooks/

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

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/
December 19, 2017 and April 24, 2018
Learning is More Free and Open
eTexts 101: A Practical Guide
https://iu.pb.unizin.org/iuetexts101/front-matter/introduction/

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)

May 3, 2017
Learning is More Free and Open
4 out of 5 Companies Have Hired a Coding Bootcamp Graduate
Sri Ravipati, Campus Technology
https://campustechnology.com/articles/2017/05/03/4-out-of-5-companies-have-hired-a-coding-bootcamp-graduate.aspx

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

March 21, 2018
Learning is More Direct from Experts
TeachMeNow
TeachMeNow is a gig-economy platform for teachers. This marketplace connects teachers, experts, and mentors to students, lv technology companies, universities, parents and the virtual version that can connect on any device. How new era of education is about how much better we can make the learning experience through more effective, unique and computer-driven content for students to learn from online teachers, with more savings than $315 billion now possible. In addition, schools and companies can create branded online learning institutions.
https://teachmenow.com/
How Learning is Changing: Mega Trend #3. Customization

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

March 2, 2018
The Architecture of Ideal Learning Environments
Emelina Minero, Edutopia

January 20, 2016
Learning is More Blended
Universities tap growth of craft beer, offer classes, Chicago Tribune

October 14, 2017
Learning is More Personalized
China wants to bring artificial intelligence to its classrooms to boost its education system

November 15, 2018
Learning is More Personalized
TutorIT SAT Prep Joseph M. Scandura; scandura0@gmail.com

Students can now practice on actual SATs at www.TutorT.org. They also will get individualized help on items they miss, as long as they wish or until they get them all right.

SATs generally cover very similar material from one year to the next. Students can continue with additional SATs until they reach their goal.
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-choice tests. Several professors who use it say the automation has actually made it easier for them to personalize their teaching.

At the University of Michigan at Ann Arbor, students in a statistics class last fall had their writing assignments evaluated by an automated text analysis tool.

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/reviews/2017/05/09/amazon-echo-show-touchscreen-video-alexa/101448844/

August 2, 2018
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

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

The Terribly Thin Conception of Ethics in Digital Technology, David Golumbia, Uncomputing
http://www.uncomputing.org/

Bot teacher that impressed and fooled everyone, Donald Clark, Plan B
http://donaldclarkplanb.blogspot.co.uk/2016/12/bot-teacher-that-impressed-andfooled.html

April 8, 2018
What I Learned When My Students Used Google Translate
Diane Loyet, 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.

• 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 cure to do, that is, chronic diseases and even health care, unlike acute disease, once the recipe to treatment, the consequences will soon be reflected.
May 9, 2018
Learning is More On Demand
Google Duplex Demo from Google IO 2018
Video (4:11): https://www.youtube.com/watch?v=ch4ZgEpEvzI
Video (2:45): http://curtbonk.com/google40-245.html
Donald Clark Plan B
http://donaldclarkplanb.blogspot.ca/2018/05/google-just-announced-ai-bot-that-could.html?m=1

January 22, 2018
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/

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

July 1, 2015 (Customization)
Chapter 14: Creating a Temporary Spontaneous Mini-Ecosystem through a MOOC
Paul Kim and Charlie Chung, Stanford University
Figure 2. Twitter thread announcing the MOOC

June 14, 2016 (Customization)
Chapter 15: Learning About MOOCs by Talking to Students
Charles Severance, Univ. of Michigan
Anuar Lequerica, Class Central
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

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/

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/2017/03/01/edx-expands-micromasters-programs/

Email inbox: June 11, 2018
Coursera
https://www.coursera.org/

MOOCs are Like Library Books...
Poll: Excited or does all this give you a headache?

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