What is the Future of Learning?: Visions of Education 20/20 in 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
http://curtbonk.com/automation.html

September 18, 2018
Machines will create 56 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

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

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

Intelligence Augmentation and Amplification
Douglas Engelbart’s “The Mother of All Inventions” (1968)
Augmentation Research Center (ARC)
(“The live demonstration had multiple introduction of the computer mouse, video conferencing, hypertext, word processing, hypertext, computer animation, and real-time dialogue with a computer.”)
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.

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://www.youtube.com/watch?v=a-NLh58bIK

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

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.

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

Education 3.0
The Genesis and Emergence of Education 3.0 in Higher Education and its Potential for Africa
First Monday, by Derek Keats and J. Philipp Schmidt, March 2007

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

September 18, 2017
Education 1.0 to 3.0

November 8, 2018
Learning is More Personalized
AI Question Asking
(Paul Kim keynote in Taiwan: Education 4.0 Conference)
https://www.facebook.com/digitalschema
https://www.facebook.com/digitalschema/videos/10217854957270186/
What is turbulence?

Why is turbulence dangerous to small airplanes?

When did Elon successfully launch the SpaceX program?

Who admitted that launching the car into space was "kind of silly and fun?"

How do you compare Elon Musk and Nicolas Tesla?

How is Mars different from Jupiter?
“It’s quite clear that the established models of education have to change and adapt to the new environment.”

“Clearly... Learning is Changing!”

1. Instructor as Counselor
2. Instructor as Consultant

3. Instructor as Conductor

4. Instructor as Course Ambassador

5. Instructor as Curator

6. Instructor as Concierge

7. Instructor as Camping Trip Guide
8. Instructor as Cultivator

20 New Roles of the Instructor

April, 2016
Instructional Design in Higher Education, Gates Foundation and Intentional Futures

Merrill’s First Principles of Teaching/Instruction

Bonk’s Last Principles of Teaching/Instruction (Education 4.0?)
1. The Principle of Flexibility

2. The Principle of Convenience

3. The Principle of Collegiality

4. The Principle of Cheerfulness and Optimism

5. The Principle of High Expectations

6. The Principle of Choice and Options
7. The Principle of Empowerment and Autonomy
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

10. The Principle of Organization
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

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 World of Open Education
**September 19, 2014**

Story #1... I am a product of distance learning...

Bob Clasen, University of Wisconsin

[https://www.youtube.com/watch?v=kCm1_MGaqec&feature=youtu.be](https://www.youtube.com/watch?v=kCm1_MGaqec&feature=youtu.be)

February 27, 1934 - March 17, 2018


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**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

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

“One Purpose”

20. ??? (what is missing)

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

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

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

Flexibility
Convenience
Collegiality
Cheerfulness and Optimism
Support and Feedback
Spontaneity
Organization
Sharing
Choice and Options
Nontraditional Learning
Passion and Inspiration
Relevance and Meaningfulness
Trial and Error (i.e., it is ok to fail)
Expanded Resources
Human Connectedness
Cognitive Apprenticeship
Purpose and Vision
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
visual
touch-sensored
adventurous
digital & resource rich
immersive
collaborative
August 8, 2017  
Learning is More Game-like  
ShortSims  
http://www.shortsims.com/  
Clark Aldrich clark@clarkaldrichdesigns.com

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  
Video (1:46):  
http://curtbonk.com/sanquentin.html

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

May 1, 2018  
Learning is More Hands-on  
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.

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/  
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.

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)
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
HoloLens Assists in Live Surgery
Tommy Palladino, Next Reality
Video #1: 1:09: http://curtbonk.com/hololens.html
Video #2: 1:37: http://curtbonk.com/hololens2.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-classrooms.aspx
https://www.youtube.com/watch?v=DYqlaMWTVg
27 seconds http://curtbonk.com/thejournal27.html
38 Seconds http://curtbonk.com/thejournal38.html
1:10: http://curtbonk.com/thejournal.html

How Learning is Changing:
Mega Trend #2. Pervasive Access
informal free
global open
video-based synchronous ubiquitous
direct from experts online
immediate

August 1, 2016 (Access)
Learning is More Ubiquitous
363 by Idea Group; Study Café Meeting Place; Idea Space (Seoul, Korea)
http://363.co.kr/wp/?page_id=244
http://363.co.kr/wp/?bw_gallery=study-cafe_11

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
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.

July 11, 2018
Learning is More Immediate...
Fossil of first giant dinosaur, dubbed Ingentia prima, found in Argentina
Brett Molina, USA Today

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

November 19, 2015 (Access)
Learning is More Immediate...
New daddy longlegs named after 'Lord of the Rings' character Smeagol, Mary Bowerman, USA Today

October 4, 2018 (Engagement)
Learning is More Synchronous
Shindig, Future Trends Forum, Bryan Alexander
Anant Agarwal, CEO and founder of edX
https://bryanalexander.org/the-future-trends-forum/
http://www.shindig.com/
https://shindig.com/client/client/?event=ftf-agarwal

February 19, 2018
Learning is More Online (Access)
Grade Increase: Tracking Distance Education in the United States
Joshua Kim, Inside Higher Ed
http://onlinelearningsurvey.com/reports/gradeincrease.pdf
http://babson.qualtrics.com/jfe/form/SV_djbTFMIjZGYDNVb
November 1, 2017
Learning is More Online (Access)
Indiana University, Office of Online Education

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
https://www.chronicle.com/article/Can-a-Huge-Online-College/244054

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

March 27, 2017 (Access)
Learning is More Free and Open
Beyond Free: Harnessing the resonant value in open and collaborative practices for the public good
David Porter, CEO, eCampus Ontario,
Open Education Ontario Summit
https://www.slideshare.net/David_Porter
https://www.ocls.ca/events/open-education-ontario-summit

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/

May 19, 2016 (Access)
Learning is More Free and Open
From MOOC to bootcamp to MIT
MIT News, Office of Digital Learning

May 3, 2017
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.
VIPKid
https://www.fastcompany.com/company/vipkid
Learning is More Direct from Experts
March 21, 2018
TeachMeNow is a gig-economy platform for teachers. This marketplace connects teachers, experts, and mentors to students. The technology streamlines scheduling, payments and live virtual sessions that can connect on any device allows tens of thousands of teachers to create their own online businesses, with some earning over $100,000 last year. Additionally, schools and companies searching through TeachMeNow can create their own branded virtual learning communities.
https://teachmenow.com/

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/blogs/technology-and-learning/professors-have-taken-over-moocs

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

May 12, 2017 (Customization)
Learning is More Modifiable
The Future of Collaboration Spaces Encompasses Video Interactive, Mobile, Julie Johnston, Ed. Campus Technology
March 2, 2018
The Architecture of Ideal Learning Environments
Emelina Minero, Edutopia
https://www.edutopia.org/article/architecture-ideal-learning-environments

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

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

October 14, 2017
Learning is More Personalized
China wants to bring artificial intelligence to its classrooms to boost its education system
How the takeoff of AI-enabled education will affect the interaction between China’s 14 million teachers and 188 million pupils
Meng Jing, South China Morning Post

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.TutorIT.org. They also will get individualized help on items they miss, as long as they wish or until they get them all right.

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.

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/
44 Seconds: http://curtbonk.com/jetsons44.html

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

April 8, 2018
Learning is More On Demand
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 cobrara 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.

April 8, 2018
Learning is More On Demand
What I Learned When My Students Used Google Translate
Diane Loyet, The Chronicle of Higher Education
• 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=bd1mEm2Fy08
Video (2:05): http://curtbonk.com/google40-245.html
Donald Clark Plan B
http://donaldclarkplanb.blogspot.ca/2018/05/google-just-announced-ai-bot-that.html?m=1
January 22, 2018
Learning is More Massive
MOOCs for Credit
Class Central
https://www.class-central.com/report/moocs-for-credit/

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

September 26, 2018
The Future of Professional Credentialing ...
... in an Engagement Announcement
Joshua Kim, Inside Higher Ed

April 20, 2015
250 MOOCs and Counting: One Man’s Educational Journey,
Chronicle of Higher Education
http://chronicle.com/article/250-MOOCs-Counting-One/229397/?cid=at
If the MOOC movement has failed, nobody told Jima Ngei. Mr. Ngei, who lives in Port Harcourt, Nigeria, has completed and passed 250.

MOOCs and Open Education Around the World
http://routledge-ny.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

Jima Ngei: “I had this unrelenting fear that this miracle of free access might evaporate soon.”
Chapter 15: Learning About MOOCs by Talking to Students

Charles Severance, Univ. of Michigan
Anuar Lequerica, Class Central


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/

January 22, 2018
A Review of MOOCs Stats and Trends in 2017, Dhawal Shah, Class Central


October 12, 2018 (Customization)
Learning is More on Modular
edX Expands MicroMasters Programs With Data Science (“nanodegree”)
Digital Leadership and More, Sri Ravipati, Campus Technology


Lindsey McKenzie, Inside Higher Ed


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

August 7, 2017
FutureLearn and Coventry University to Roll Out 50 Online Degrees (Last year Deakin University announced a similar partnership with FutureLearn)
Class Central, Dhawal Shah

Email inbox: June 10, 2018
edX (Summer discounts)

Email inbox: June 11, 2018
Coursera

MOOCs are Like Library Books...

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

WHAT'S NEXT
Prepare For Future Learning
August 1, 2018
1. Independent Studies Via MOOCs
MOOC: AI A-Z: Learning How to Build an AI Online Course and Machine Learning
Mengyuan Zhao
https://www.udemy.com/artificial-intelligence/
https://www.coursera.org/learn/machine-learning

October 12, 2018
2. OER-Based Courses and Programs
The Chronicle of Higher Education
Launching OER Degree Pathways:
An Early Snapshot of Achieving the Dream’s OER Degree Initiative and Emerging Lessons

September 22, 2017
3. Binge Learning Experiences
What Online Education Can Learn from Netflix
Henry Kronk, E-learning Inside News
https://theumlaut.com/binge-learning-is-online-education-s-killer-app-84da18f8ae76

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

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

September 26, 2018
6. Interactive Agents and Tutors
Pushing the Boundaries of Learning With AI
Lindsay McKenzie, Inside Higher Ed
https://www.youtube.com/watch?time_continue=4&v=7EuSTu1iR2A
1:17:
http://curtbonk.com/mandarin.html
January 30, 2017
7. Professor Einstein PDA’s

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
8. Robot Collaborators/Partners

February 27, 2017
9. Café Classroom and Café Connectedness

Sterile, industrial-era rows aren’t very attractive or motivating. ... 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.

May 3, 2016
10. Instructional Designer Morphs into Learning Environment Engineer

February 27, 2017
11. World Knowledge Refreshment Stations

June 3, 2016
12. Explosion of Virtual Reality

VR Lets Med Students Experience What It’s Like To Be 74
Elyse Wanshel, Huffington Post
http://ht.ly/bSpe300XEPJ
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