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...
Megatrends of Learning:
a. Engagement
b. Access, and
c. Customization
3. Technology Tomorrow and Future Trends

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

Part 1: Technology Yesterday

Poll: Remember Education 1.0
1728: 1st correspondence course advertised Boston
(learn shorthand from Caleb Phillips thru weekly mailed lessons)
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

Mimeograph machine.
June 3, 2017
How PLATO changed the World...in 1960
Cait Etherington, ElearningInside News
PLATO was the first generalized computer-assisted instruction system. Starting in 1960, it ran on the University of Illinois' ILIAC I computer. By the late 1970s, it supported several thousand simultaneous distributed students, running on nearly a dozen networked mainframe computers. Many modern concepts in multi-user computing were originally developed on PLATO, including forums, message boards, online testing, instant messaging, chat rooms, remote screen sharing, and multiplayer games.

Intelligence Augmentation and Amplification
Douglas Engelbart's "The Mother of All Inventions" (1968)
Augmentation Research Center (ARC)
(Engelbart's "The Mother of All Inventions" (1968) is available on YouTube: https://www.youtube.com/watch?v=x5U_Ab6hF8Y)

The World of Open Education
Poll: Anyone remember these technologies?
May 10, 2013
10 ed-tech tools of the 70s, 80s, and 90s
eSchool News, Meris Stansbury
https://www.eschoolnews.com/2013/05/10/10-ed-tech-tools-of-the-70s-80s-and-90s/

September 19, 2014
A Distance Learning Story
Bob Clasen, University of Wisconsin
https://www.youtube.com/watch?v=kCm1_MGaqec&feature=youtu.be
March 17, 2018
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

February 18, 2019
Is Email Making Professors Stupid?
Cal Newport, The Chronicle of Higher Education
https://www.chronicle.com/interactives/is-email-making-professors-stupid

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
http://www.mit.edu/about/15-years/

April 4, 2016
MIT OpenCourseWare is 15!
http://www.mit.edu/about/15-years/
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.

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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)

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)

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/

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Question Answering: Level 1 – Level 5

(Paul Kim, Taiwan, November 2018)

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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?”
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 build a plant in Colorado, not in New York?
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?
It’s quite clear that the established models of education have to change and adapt to the new environment.
"It’s quite clear that the established models of education have to change and adapt to the new environment.”
Clearly…
Learning is Changing!
**20 New Roles of the Instructor**

- Captain
- Course Ambassador
- Curator
- Change Catalyst
- Counselor
- Cook
- Change Catalyst
- Concourse
- Comedian
- Consultant
- Camping Trip Guide
- Coach
- Community Organizer
- Course Expedition Leader
- Collaborator
- Cultivator
- Chemist
- Care Giver
- Colleague

**Merrill’s First Principles of Teaching/Instruction**

Integration | Activation
---|---
Problem/Task | Application
Application | Demonstration

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

- Convenience
- Spontaneity
- Support and Feedback
- Choice and Options
- Nontraditional Learning
- Passion and Inspiration
- Trial and Error (i.e., it is okay to fail)
- Expanded Resources

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

- Flexibility
- Collegiality
- Organization
- Sharing
- Human Connectedness
- Cognitive Apprenticeship
- Purpose and Vision
- High Expectations
- Empowerment and Autonomy


[http://www.applicadthai.com/articles/education-4-0/](http://www.applicadthai.com/articles/education-4-0/)
Technology Today: 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)

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

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

https://www.huffingtonpost.com/entry/scientist-pens-270-wikipedia-pages-in-a-year-so-female-scientists-get-noticed_us_5b574eede4b0b15aba92c0d5
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
Video (1 minute): http://curtbonk.com/facebook-portal.html

Learning is More Collaborative
(e.g., PiratePad: http://meetingwords.com/)
MeetingWords, Google Docs, NewComment, Mixedink

July 1, 2015
Learning is More Collaborative
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

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=9tucY7Jhhs4
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
Video: 1:00 Microsoft AI + Iconem: Preserving History ft. Common: https://www.youtube.com/watch?v=ZDZjaIhzMSM
Video: 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common: https://www.youtube.com/watch?v=7rzufxlGH4o

April 17, 2017
Learning is More Adventurous...
1st woman to officially run Boston Marathon does it again, 50 years later
Emanuella Grinberg, CNN, USA Today

August 8, 2017
Learning is More Game-like
ShortSims
http://www.shortsims.com/
Clark Aldrich clark@clarkaldrichdesigns.com
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
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
Numerous examples exist of doctors and surgeons using HoloLens in the OR. 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.

September 4, 2017
Virtual Reality and AR Explodes
VR Lets Med Students Experience What It’s Like To Be 74
Elyas Wanshal, Huffington Post
Virtual reality lets medical students experience what it’s like to be a patient of 74 years old.

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, 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.

July 17, 2017
Learning is More Immersive
Learning Chemistry in Virtual Reality,
Sarah Hardman, New Learning Times
Numerous examples exist of doctors and surgeons using HoloLens in the OR. 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 #1: 1:09: http://curtbonk.com/hololens.html
Video #2: 1:37: http://curtbonk.com/hololens2.html
07/19/2017
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=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
free
global
open
video-based
synchronous
ubiquitous
online
direct from experts
immediate

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.

January 5, 2017
Learning is More Immediate...
Move over T. rex, new dinosaur unveiled, Amanda Jackson, CNN
http://www.cnn.com/2016/01/14/living/titanosaur-new-dinosaur-new-york-airport/

July 11, 2018
Learning is More Immediate...
Fossil of first giant dinosaur, dubbed Ingentia prima, found in Argentina
Brett Molina, USA Today
15 second: http://curtbonk.com/ghostbusters15.html
November 19, 2015 (Access)
Learning is More Immediate...
New daddy longlegs named after 'Lord of the Rings' character Smeagol, Mary Bowerman, USA Today

November 28, 2018
Learning is More Immediate...
'Siberian unicorn' once walked among early humans
Tara John, CNN

November 20, 2018 (Access)
Learning is More Video-based...
The Mantis Cam Gives Us a Peek into a Whole New Ocean World
Melanie Hering, New Learning Times
https://newlearningtimes.com/cms/article/5741/the-mantis-cam-gives-us-a-peek-into-a-whole-new

June 18, 2018
Learning is More Video-based...
(e.g., Flipgrid)
Microsoft acquires social learning platform Flipgrid, Brian Heater, TechCrunch
https://techcrunch.com/2018/06/18/microsoft-acquires-social-learning-platform-flipgrid/

October 4, 2018 (Engagement)
Learning is More Synchronous
Shindig, Future Trends Forum, Bryan Alexander
http://www.shindig.com/client/client/?event=ftf-agarwal
http://events.shindig.com/event/ftf-anniversary

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

March 5, 2019
UMass System Aims to Join the Mega-University Club
Lee Gardner, The Chronicle of Higher Education

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

September 17, 2018
Talk to Books
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.slideshare.net/eCampusOntarioSummit

March 19, 2018
Learning is More Free and Open
Open Textbook Network
Center for Open Education, University of Minnesota
https://research.cehd.umn.edu/otn/

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 2, 2018
Learning is More Free and Open
OpenStax Infographic

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

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

November 19, 2018
Learning is More Free and Open
Students Save $70 Million with OpenStax

April 21, 2018
Learning is More Free and Open
New Venture Will Offer Free Courses That Students Can Take for College Credit
The World is Open: How Web Technology Is Revolutionizing Education

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 is a gig-economy platform for teachers. This marketplace connects teachers, experts, and mentors to students. The technology combines scheduling, payments and live virtual sessions in one platform. It allows tens of thousands of teachers to create their own online businesses, with some earning over $100,000 last year. In addition, schools and companies including Microsoft use TeachMeNow software to create their own branded online learning communities.

https://teachmenow.com/

February 14, 2019
Could On-Demand Online Tutoring Be The Gateway To Personalizing Learning For Colleges?

Michael Horn, Forbes
Could On-Demand Online Tutoring Be The Gateway To Personalizing Learning For Colleges?

https://www.givingcompass.org/article/could-on-demand-online-tutoring-be-the-gateway-to-personalizing-learning-for-colleges
How Learning is Changing:
Mega Trend #3. Customization

January 14, 2018
Learning is More Communal
Facebook invites you to live in a bubble where you’re always right
Callum Borchers, The Washington Post

March 2, 2018
Learning is More Modifiable
The Architecture of Ideal Learning Environments
Emelina Minero, Edutopia
https://www.edutopia.org/article/architecture-ideal-learning-environments

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 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
(e.g., Augmented hearing)
March 14, 2016
Learning is More Personal
Artificial Intelligence and Robots
Paul Basken, The Chronicle of Higher Education

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

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

August 2, 2018
Learning is More On Demand (PDAs)
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
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 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
  • Accurate translation: If I were you, I would even charge him for breathing
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.

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-could.html?m=1

Weirdness #7: From MOOC to bootcamp to MIT
MIT News, Office of Digital Learning
(Jin Wu—from MITx to MIT Global Entrepreneur Bootcamp to master's student)

Weirdness #8: Hundred+ MOOC Clubs
April 20, 2015
250 MOOCs and Counting: One Man’s Educational Journey, Chronicle of Higher Education
http://chronicle.com/article/250-MOOCsCounting-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.

Jima Ngei: "I had this unrelenting fear that this miracle of free access might evaporate soon."
MOOCs and Open Education Around the World
http://routledge-ny.com/books/details/9781138807419/

Part III. Technology Tomorrow
http://www.huffingtonpost.ca/dr-marie-bountrogianni/prepare-for-future-learn_b_16407756.html

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-az/
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-educations-killer-app-84da18f8ae76

Saving money with open-ed resources.

- A large-scale effort to encourage the use of open-education resources has helped students save money and minimized their learning, according to a recent column by Griffith et al. (2018). The findings from the second year of Achieving the Dream's OER Degree Initiative show that over 60 percent of students reported that the overall quality of their learning experience in an OER course was higher in comparison to a typical, non-OER course.

- The number of OER courses at participating institutions jumped from 13 in 2016 to 385 in the spring of 2018; the number of students enrolled in OER courses went from 3,404 in 2016 to 37,398 in 2017.

- Students saved between $66 and $121 per course.
- Over 60 percent of students reported that the overall quality of their learning experience in an OER course was higher in comparison to a typical, non-OER course.
- The number of OER courses at participating institutions jumped from 13 in 2016 to 385 in the spring of 2018; the number of students enrolled in OER courses went from 3,404 in 2016 to 37,398 in 2017.
4. Rise of Super E-Mentors and AI Coaches
(Paul Kim, 2018)

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

September 26, 2018
6. Interactive Agents and Tutors
Pushing the Boundaries of Learning With AI
Lindsay McKenzie, Inside Higher Ed

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

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

Video (57 seconds): http://curtbonk.com/robots1.html
March 29, 2017
Every industrial robot takes up to 6 jobs, study finds
Steve Goldstein, MarketWatch
Video: 4:4-1:12: http://curtbonk.com/futureandroid2.html
Video: 0:1 to 3:5: http://curtbonk.com/futureandroid4.html

March 24, 2017
Artificial Intelligence Market in the US Education Sector 2017-2021
AI Market to Grow 47.5% Over Next Four Years
Richard Chang, Campus Technology
http://www.researchandmarkets.com/research/5lshzz/artificial-AI-Market-to-Grow-47.5%Over-Next-Four-Years

9. Café Classroom and Café Connectedness
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.... 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.

10. Instructional Designer Morphs into Learning Environment Engineer
February 27, 2017
Instructor Network Initiative
http://www.thelivingmoon.com/43ancients/02files/Library_Alexandria.html

February 21, 2019
Improving Student Outcomes with Adaptive Courseware: The Every Learner Everywhere Network Initiative
by Karen Vignone, Ryan Kelty, and Stacey VanderHilton-Coney, EDUCAUSE Review
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