What is the Future of Learning?:
Visions of Education 20/20 in Our Changing Learning World!
Curtis J. Bonk, Professor, Indiana University
cjbonk@indiana.edu
http://mypage.iu.edu/~cjbonk/

Talk Overview
1. Education 20/20
2. New Roles of the Instructor
3. First and Last Principles of Instruction
4. Artificial Intelligence vs. Intelligence Augmentation
5. Megatrends of Learning: Engagement, Access, and Customization (30 ways that learning is changing...)
6. Future Trends and Ideas

(Circa Confucius 551–479 BCE)

What happens to sleeping students?
Education 20/20

20 New Roles of the Instructor

- Captain
- Counselor
- Curator
- Concierge
- Cook
- Change Catalyst
- Conductor
- Camping Trip Guide
- Course Expedition Leader
- Community Organizer
- Chemist
- Collaborator
- Care Giver
- Cultivator
- Colleague

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

- Flexibility
- Support and Feedback
- Nontraditional Learning
- Trial and Error (i.e., it is ok to fail)
- Choice and Options
- Spontaneity
- Passion and Inspiration
- Relevance and Meaningfulness
- High Expectations
- Purpose and Vision
- Human Connectedness
- Empowerment and Autonomy
- Convenience
- Cheerfulness and Optimism
- Spontaneity
- Nontraditional Learning
- Trial and Error (i.e., it is ok to fail)
- Choice and Options
- Spontaneity
- Passion and Inspiration
- Relevance and Meaningfulness
- High Expectations
- Purpose and Vision
- Human Connectedness
- Empowerment and Autonomy

Merrill’s First Principles of Teaching/Instruction

Integration | Activation
Application | Demonstration

- Problem / Task

The First Principles Four Phase Cycle of Instruction

M. DAVID MERRELL

http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
Poll #1: 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

Fast Forward 200 Years...
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 (On Wisconsin, Fall 2014)

Poll #2: Fast Forward 50 more Years...
Do you remember education 2.0?

Poll #3: Do you really remember what was to be education 2.0?
Fast Forward 30+ More Years...
“Anyone can now learn anything from anyone at any time.”

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

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/eng/admission/education4.html (Chula Engineering)

January 14, 2016
The Fourth Industrial Revolution:
What it means, how to respond
Klaus Schwab, Founder and Executive Chairman, World Economic Forum
http://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.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-
what-it-means-and-how-to-respond/
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.”

August 17, 2016
Research: 3D Printing Market to Double by 2020
Joshua Bolkan, Campus Technology

June 7, 2016
Teaching refugees how to code
CNN Money

June 20, 2016
Coursera on a Mission to Help Refugees
Lauren Camera, US News and World Report

February 9, 2017
More black and Latino students learn to code as Code.org classes swell
Jessica Guynn, USA Today

Poll #4:
Read any good books lately detailing this shift?
The Innovators:
Walter Isaacson (2014)
http://books.simonandschuster.com/The-Innovators/Walter-Isaacson/9781476708690

Machines of Loving Grace:
John Markoff (2015)
http://www.amazon.com/Machines-Loving-Grace-Common-Ground/dp/0062266683

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

Intelligence Augmentation and Amplification
Douglas Engelbart’s “The Mother of All Inventions” (1968)
Augmentation Research Center (ARC)
(The live demonstration featured the introduction of the computer mouse, video conferencing, teleconferencing, hypertext, word processing, cooperative, object-addressability and dynamic file linking, bootstrapping, and a collaborative real-time editor.)

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

August 6, 2016
The Web is 25!
Happy (sort of) birthday, World Wide Web!
Erica Fink and Jonathan Tortion, CNN Money (Tech)
http://www.youtube.com/watch?v=hb4AzF6wEoc

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

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http://www.youtube.com/watch?v=hb4AzF6wEoc
January 15, 2016
Wikipedia is 15!
Scott McLemee, Inside Higher Ed


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

The World is Open: How Web Technology Is Revolutionizing Education

TEN OPENERS: (W-E-ALL-LEARN)
1. Web searching in the World of E-books
2. E-Learning and Blended Learning
3. Availability of Open Source and Free Software
4. Leveraged Resources and OpenCourseWare
5. Learning Object Repositories and Portals
6. Learner Participation in Open Information Communication
7. Electronic Collaboration
8. Alternate Reality Learning
9. Real-Time Mobility and Portability
10. Networks of Personalized Learning

July 2016
I. Elaine Allen and Jeff Seaman, Babson Survey Research Group

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

Phase IV, 2015: THE AGE OF PERSONALIZATION.

Other prior significant e-learning dates:
1985: FIRST ONLINE COURSE, LINDA HAMSM, U. OF TORONTO
1987: HYPERCARD FIRST SHIPPED.

Thirty Ways Learning is Changing...
(i.e., it’s more informal, video-based, ubiquitous, collaborative, self-directed, global, mobile, open, massive, etc.)
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-sensed
- game-based
- adventurous
- digital & resource rich
- immersive
- collaborative

Learning is More Social

February 7, 2017 (Engagement)
Learning is More Social
YouTube takes on Facebook with mobile live
Jefferson Graham, USA Today

Learning is More Immersive

February 27, 2017 (Engagement)
Learning is More Immersive
Augmented and Virtual Reality Spending to Double in 2017, Sri Ravipati, THE Journal

Worldwide: "forecasts the AR/VR market to reach $13.9 billion in 2017—up 130.5 percent from the $6.1 billion spent in 2016. Furthermore, AR/VR spending is expected to accelerate over the next several years, achieving a compound annual growth rate (CAGR) of 189 percent over the 2015-2020 forecast period and reaching $143.3 billion in 2020."

June 10, 2015 (Engagement)
Learning is More Immersive
August reality promises "superpowers", and people are listening
The USA Today, Marco della Cava

Letsee is an AR app from a South Korean carman to scan a product and see reviews instantly overlaid over top.

Microsoft HoloLens: https://www.youtube.com/watch?v=aThCr0PsyuA
May 7, 2015 (Engagement)
Learning is More Adventurous
Aaron Doering, Chasing Seals, TEDx
http://chasingseals.com/
https://twitter.com/chasingseals

July 22, 2016 (Engagement)
Learning is More Game-like
When Pokémon Goes to Campus: The Good, the Bad, and the Ugly
Gabriel Sandoval, Chronicles of Higher Education
http://chronicle.com/article/When-Pokemon-Goes-to-Campus/237219/?cid=trend_au&elqTrackId=c60af7ea6da640ec98d260eb7af9ef66&elq=95ace8ab293b4a5ead1a353c0e6f0dfc&elqaid=9961&elqat=1&elqCampaignId=3667

August 23, 2016 (Engagement)
Learning is More Visual
e.g., reef videoconferencing
(Great Barrier Reef, Australia)

February 15, 2017 (Engagement)
Learning is More Synchronous
Shindig, Future Trends Forum, Bryan Alexander
https://bryanalexander.org/the-future-trends-forum/
http://www.shindig.com/
http://events.shindig.com/event/ftf-anniversary

February 17, 2016 (Engagement)
Learning is More Mobile
World’s Cheapest Smartphone at $3.67

Want “FREE” engagement?
How about "Adding Some TEC-VARIETY”?
http://tec-variety.com/
How Learning is Changing: Mega Trend #2. Pervasive Access

Informal, global, video-based, ubiquitous, online, immediate, open, synchronous, direct from experts

July 21, 2016 (Access)
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)

August 1, 2016 (Access)
Learning is More Ubiquitous
363 by Idea Group; Study Café Meeting Place; Idea Space (Seoul, Korea)

May 7, 2014 (Access)
Learning is More Global
CNA - Speaking Exchange (video chats)

February 22, 2017 (Access)
Learning is More Informal
Digital citizenship lessons from a 9-year-old with 18,000 Twitter followers, Alan November, eSchool News

August 5, 2015 (Access)
Learning is More Informal
Shubham Jaglan (10 years old) Overwhelmed by "Dream" Return Home After Double World Championship

Disha Chopra, NDTV Sports
June 13, 2016 (Access)
Learning is More Free and Open
Nine-Year-Old Anvitha Vijay is the Youngest Developer at WWDC (age 9)
(Apple Worldwide Developers Conference), Gadgets

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

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)

September 28, 2016 (Access)
Learning is More Free and Open
Bookshare, An accessibility online library for people with disabilities

May 4, 2016 (Access)
Learning is More Video-Based
What I Learned at the ASU GSV Summit
Kenneth Green, Inside Higher Ed

September 14, 2015 (Access)
Learning is More Video-Based
Credit for Watching a TED Talk? A new platform aims to help employers track casual learning
Chronicle of Higher Education, Jeffrey R. Young
Degreed: https://degreed.com/
Mastodon bones offer clues of earliest humans in North America, Faith Karimi, CNN

Abstract: http://advances.sciencemag.org/content/2/5/e1600375

Full Article: http://advances.sciencemag.org/content/2/5/e1600375.full

Supplemental materials (PDF): http://advances.sciencemag.org/content/suppl/2016/05/10/2.5.e1600375.DC1

New daddy longlegs named after 'Lord of the Rings' character Smeagol, Mary Bowerman, USA Today


Learning is More Direct from Experts (e.g., The Expert Café)

http://expertscafe.com/

How Learning is Changing:
Mega Trend #3. Customization

massive self-directed communal on-demand
blended flipped competency-based modifiable
personal flipped personal
modular

October 14, 2011
Learning is On Demand
Siri (co-founder Tom Gruber)

http://www.imore.com/siri
May 9, 2016
Personal Digital Assistants (PDA)
Personal digital assistants are on the rise (and they want to talk)
USA Today, Edward Baig (i.e., Google codename of “Chirp”), Elizabeth Weise, USA Today
http://www.usatoday.com/story/tech/columnist/baig/2016/05/09/siri-creators-think-they-have-smarter-brainchild/84133244/

March 24, 2017
Learning is On Demand
Hey, Alexa: Siri’s not so bad after all!
Jefferson Graham, USA Today

March 20, 2017
Samsung promises its Galaxy S8 Bixby assistant will be ‘fundamentally different’
Edward Baig, USA Today, March 20, 2017
https://www.usatoday.com/story/tech/columnist/baig/2017/03/20/samsung-promises-its-galaxy-s8-bixby-assistant-viv-labs/99409962/

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

March 23, 2017
Learning is More Personal
Arizona State U Launches Open, Adaptive Lessons on Space Exploration
Rhea Kelly, Campus Technology

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

May 20, 2016 (Customization)
Learning is More Massive
agMOOCs (India)
http://www.agmoocs.in/
April 20, 2015 (Customization)
Learning is More Massive
250 MOOCs and Counting: One Man’s Educational Journey, Chronicle of Higher Education
If the MOOC movement has faded, 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.”

December 25, 2016
By The Numbers: MOOCS in 2016
Dhawa Shah, Class Central

Class Central

August 12, 2016 (Customization)
Class Central's Top 50 MOOCs of All Time, Dhawal Shah, Class Central Blog
“Now there are close to 6,000 MOOCs from 600+ universities around the world.”
https://www.class-central.com/report/top-moocs/

August 12, 2016 (Customization)
A Life of Happiness and Fulfillment
Indian School of Business, Rajagopal Raghanathan

Thousands sign up for free online wine course, John Elmes, Wine News
http://www.decanter.com/wine-news/online-wine-course-adelaide-325646/
March 3, 2017 (Customization)
edX Expands MicroMasters Programs
With Data Science (“nanodegrees”)
Digital Leadership and More, Sri Ravipati, Campus Technology

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

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

August 24, 2016
K-MOOCs (and OpenMOOCs and hMOOCs)
Revolutionizing online education
Professor creates courses tailored to cultural differences
Korea JoongAng Daily, Bong-Moon Kim
http://www.kmooc.kr/
30+ Ways Learning is Changing:
Recapping the Three Mega Trends:
Engagement, Access, and Customization

January 30, 2017
1. 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)
http://www.usatoday.com/story/tech/2017/01/30/robotic-barista-now-serving-really-fast/95888780/

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

February 27, 2017
3. Robot Collaborators/Partners
Pepper the robot needs U.S. programmers, Marco della Carva, USA Today
http://www.usatoday.com/story/tech/news/2016/05/18/google-calling-all-android-robot-programmers/84461778/

May 19, 2016
Pepper the robot needs U.S. programmers, Marco della Carva, USA Today
Usual internal link: http://trainingshare.com/usa2.html
New download link: https://www.dropbox.com/s/hxcuwqgvaj20oiv/pepper-the-robot2.mp4?dl=0
March 14, 2016
Artificial Intelligence and Robots
Paul Basken, The Chronicle of Higher Education

Behind a Computer's Surprise Victory, Hints of Global Economic Upheaval

February 27, 2017
3. Three Part Resumes/CV's

Looking for a Job

July 28, 2016
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)

We eliminate the gap between employment and education

February 27, 2017
3. Global Learning Partner or PBL Team Selection Walls

May 4, 2016
6. MOOCs Social Justice and Spirituality
MOOC 4.0: The Next Revolution in Learning & Leadership, Otto Scharmer, Huffington Post

September 2, 2016
5. MOOC Graders and Tutors
Introduction to Philosophy: God, Knowledge and Consciousness
($300 USD for an identity-verified certificate)
Carl Straumsheim, Inside Higher Ed

Humans, the Latest MOOC Feature

MT experiments with instructor grading in massive open online courses as a way to expand teaching and learning opportunities for students and instructors.
September 15, 2015 (Customization)
GROOCs are MOOCs for Social Impact
Social Learning for Social Impact, edX
Join the world’s first GROOC – a MOOC for groups – to collaborate with others globally and create social change.
https://www.edx.org/course/social-learning-social-impact-mcgillx-groocx
https://www.youtube.com/watch?v=WNg5LFAMdI

7. Rise of Super E-Mentors

8. Café Classroom and Café Connectedness

9. Instructional Designer Morphs into Learning Environment Engineer

10. The Age of Personalization

The Future of Learning Plague
The new “Four Horsemen” of the Apocalypse:
Quality, Copyright, Plagiarism, and Assessment...
March 27, 2017
What will learning look like in 2025?
John Cavanaugh, eCampus News

11. Orientation through VR
12. Scheduling through AI
13. Fully-Immersive Course Content
14. AI Analytics

June 3, 2016
Virtual Reality Lets Med Students Experience What It’s Like To Be 74
Elyse Wanshel, Huffington Post
http://ht.ly/bSpe300XEPJ

April 10, 2016
Virtual reality tested by NFL as tool to confront racism, sexism
Marco della Cava, USA Today

One VR diversity demo places the user in the body of an African-American woman as a white male avatar gets aggressive mere feet away. (In one Stanford VR demo, subjects are made to feel what is like to be homeless, as in this scene where the user is transported into the body of a woman riding the bus with a few possessions.)

March 24, 2017
Artificial Intelligence Market in the US Education Sector 2017-2021
http://www.researchandmarkets.com/research/5ls673/artificial

AI Market to Grow 47.5% Over Next Four Years
Richard Chang, Campus Technology

March 2017 (Customization)
Coolest tech from SXSW
(Robotic AI conversationalist AI developed by Osaka University)
https://www.usatoday.com/tech/2017/03/10/robotic-ai-conversationalist-ai-developed-by-osaka-university/84789469/

March 28, 2017
Elon Musk’s Neuralink wants to plug into your brain, Marco della Cava, USA Today (includes 34 second video)
https://www.usatoday.com/story/tech/talkingtech/2017/03/27/teslas-musk-may-now-want-plug-into-your-brain/99711510/
Poll #5: Who is now interested in Education 20/20...?

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

Things are heating up for PBL!

Education 20/20 is coming within reach!

Remember for Education 20/20 to impact PBL:
“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: curt@worldisopen.com