Education 20/20 Meets Education 4.0: Visions of Our Changing Learning World!
Curtis J. Bonk, Professor, Indiana University
cjbonk@indiana.edu
http://curtbonk.com/

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. Final thoughts

(Circa Confucius 551–479 BCE)

April 30, 2017
Education 1.0
‘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

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
July 24, 2018
The 100-Year Life: Living and Working in an Age of Longevity
Lynda Gratton and Andrew Scott
http://www.100yearlife.com/

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

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

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 Cynerman, 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 still. 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)

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-40/41756
https://thinc.in.th/engadmission/education4.html (Chula Engineering)

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

ST Future Economy Roundtable: Is Asia ready for the Fourth Industrial Revolution?
The Straits Times
http://www.thestarts.com/ST_Future_Economy_Roundtable.php

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
July 11, 2017
The Rise of the Phigital Learner
Going ‘phigital?’ 4 things schools need to know about Generation Z, Todd Kominiak, TrustEd
May 22, 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/

Clearly...
Learning is Changing!

Education 20/20

From Instructor as Credit Manager and Court Room Judge

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
- Course Ambassador
- Captain
- Counselor
- Curator
- Cook
- Change Catalyst
- Conductor
- Concierge
- Coach
- Collaborator
- Community Organizer
- Chemist
- Care Giver
- Consultant
- Expedition Leader
- Cultivator
- Colleague

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

Merrill’s First Principles of Teaching/Instruction

1. The Principle of Flexibility
2. The Principle of Convenience

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

(e.g., multiple ways to turn in, record the class, get student input on how to teach the class, etc.)

3. The Principle of Collegiality

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

(e.g., help turn papers into publications, introduce students to colleagues, ask them to share resources and papers with you, etc.)

4. The Principle of Cheerfulness and Optimism

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

(e.g., smile, celebrate accomplishments, positive feedback before any criticisms, etc.)

5. The Principle of High Expectations

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

(e.g., post high quality student work, challenge, offer job aids, mention students prior successes like conference presentations from final projects, etc.)

6. The Principle of Choice and Options

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

(e.g., sign up for weeks to present, have 10 midterm or final options and pick any 4, choose if want to work in a group/team or individually, etc.)

7. The Principle of Empowerment and Autonomy

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

(e.g., build something for a wider audience, design, negotiate the syllabus in a wiki, students vote on agenda items, student presentations of final projects, etc.)
August 6, 2018
Why I’m Easy: On Giving Lots of A’s
Gary Laderman, The Chronicle of Higher Education
https://www.chronicle.com/article/Why-I%27m-Easy-On-Giving-Lots/244144

Professor’s plan to let students grade themselves gets an F, Paul LeBlanc, CNN

8. The Principle of Support and Feedback
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
(e.g., offer extensive feedback, make critical friends for feedback, offer recovery brainstorm for common questions, use job aids and scaffolds, etc.)

9. The Principle of Spontaneity
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
(e.g., try stuff out and debrief, teach agenda or syllabus, combine ideas, etc.)

10. The Principle of Organization
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
(e.g., create and share agenda in advance, contact guest speakers in advance and share their bios and pics, arrange order of student presentations, etc.)

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

The World is Open: How Web Technology Is Revolutionizing Education
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
The World is very open!
(South University of Science and Technology of China, Wednesday June 10, 2015)

17. The Principle of Human Connectedness
https://travelinedman.blogspot.com/2011/05/bonks-principles-of-instruction.html

18. The Principle of Cognitive Apprenticeship
https://travelinedman.blogspot.com/2011/05/bonks-principles-of-instruction.html

19. The Principle of Purpose and Vision
https://travelinedman.blogspot.com/2011/05/bonks-principles-of-instruction.html

20. ??? (what is missing)
https://travelinedman.blogspot.com/2011/05/bonks-principles-of-instruction.html
Bonk’s 20 “Last” Principles of Instruction (LAST = Learning Activation System Template)

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

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-sensed
- 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.

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

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_5b543e4b0b15aba92c0d55

First look: Facebook unveils Portal video calling devices for the home with Alexa
Edward C. Baig, The USA Today

Microsoft AI Commercial ft. Common
Video 1:00: Microsoft AI Commercial ft: https://www.youtube.com/watch?v=9tucY7Jhhs4
(Feb 11, 2018)
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
(April 22, 2018)
Video: 1:00 Microsoft AI + Iconem: Preserving History ft. Common: https://www.youtube.com/watch?v=ZDZjaIhzMSM
(April 22, 2018)
Video: 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common: https://www.youtube.com/watch?v=7rzufxlGH4o
(April 22, 2018)

Summary and Comparison Maps
#GeoawesomeMapOfTheDay
https://twitter.com/geoawesomeness
https://www.instagram.com/p/BNwgvJfDAq3/
https://twitter.com/hashtag/GeoawesomeMapOfTheDay?src=hash

Learning is More Game-like
ShortSims
http://www.shortsims.com/
Clark Aldrich clark@clarkaldrichdesigns.com

Learning is More Adventurous
Aaron Doering, Chasing Seals, TEDx
http://chasingseals.com/
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.

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

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.

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

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

January 31 and November 28, 2018
Learning is More Immediate...
Science in the News

Holy Grail of dinosaur fossils discovered in Egyptian desert, Doyle Rice, USA Today

'Siberian unicorn' once walked among early humans, Tara John, CNN

A new species of dinosaur has been discovered in Sahara Desert. It's an extremely rare discovery because dino fossils are not known to be in that part of the world. USA TODAY
Learning is More Video-based...
The Mantis Cam Gives Us a Peek into a Whole New Ocean World
Melanie Hering, New Learning Times

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

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

Learning is More Online
Can a Huge Online College Solve California’s Work-Force Problems?
Karin Fischer, The Chronicle of Higher Education

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

Learning is More Free and Open
OpenStax Infographic
March 21, 2018
Learning is More Direct from Experts
TeachMeNow and VIPKid

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 that are streamed on and offline across a range of devices, including Mobile and other web browsers, with some earning over $100,000 last year. In addition, schools and companies utilize TeachMeNow software to create their own branded online 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

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

https://www.edutopia.org/article/architecture-ideal-learning-environments
ALC for Pre-service Teachers’ CSCL
- Active learning classroom supported collaborative learning for pre-service teacher education

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

September 17, 2018
Learning is More On Demand
Talk to Books
https://books.google.com/talktobooks/

August 2, 2018
Learning is More On Demand
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-and-fooled.html

Question Answering: Level 1 – Level 5
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?
How is Musk different from Tesla?
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”?
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?

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. Internal graders who see the automatic scores can make judgments, without grading scores on the same tests. The tool helps automate the grading process without requiring instructors to rely on multiple-choice tests. Internal graders who see the automatic scores can make judgments, without grading scores on the same tests.

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. Internal graders who see the automatic scores can make judgments, without grading scores on the same tests.
30+ Ways Learning is Changing:
Recapping the Three Mega Trends:
Engagement, Access, and Customization

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