Workshop: Education 20/20:
En"vision"ing the LAST Principles
You’ll Ever Need (15:10-17:00)
Curtis J. Bonk, Professor, Indiana University
cjbonk@indiana.edu
http://curtbonk.com/

Talk Overview
1. Education 20/20 and the Role of the Instructor
2. First and Last Principles of Instruction
3. 4 E-Learning Ages
4. Megatrends of Learning: Engagement, Access, and Customization (30 ways that learning is changing…)
5. Future Trends and Ideas

Education 20/20

"In Education 3.0, classroom 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)
September 18, 2017  
Education 1.0 to 3.0  
Gilly Salmon, University of Liverpool, UK  
http://www.gillysalmon.com/learningfutures.html

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

- Captain
- Course Ambassador
- Counselor
- Curator
- Change Catalyst
- Concierge
- Cook
- Comedian
- Coach
- Collaborator
- Community Organizer
- Chemist
- College
- Conductor
- Course Expedition Leader
- Care Giver
- Cultivator
The Creation of Effective Learning Environments


April, 2016

Instructional Design in Higher Education, Gates Foundation and Intentional Futures


July 29, 2016

Reimagine Your Learning Space: Starbucks Your Classroom!

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.

Poll: Who wants one of these? Starbucks

Bonk’s 20 Last Principles of Teaching/Instruction

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

Merrill’s First Principles of Teaching/Instruction

http://travelinedman.blogspot.com/2011/05/bonks-first-principles-of-instruction.html
1. The Principle of Flexibility
   http://travelinedman.blogspot.com/2011/05/last-principles-of-instruction.html

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

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

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

5. The Principle of High Expectations
   http://travelinedman.blogspot.com/2011/05/last-principles-of-instruction.html

6. The Principle of Choice and Options
   http://travelinedman.blogspot.com/2011/05/last-principles-of-instruction.html
7. The Principle of Empowerment and Autonomy

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

August 8, 2017
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

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 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)
Clearly... Learning is Changing!

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

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

Phase IV, 2015: THE AGE OF PERSONALIZATION.

30+ Ways Learning is Changing: The Mega Trends

How Learning is Changing: Mega Trend #1. Learner Engagement
August 17, 2016
Learning is More Hands-On
Research: 3D Printing Market to Double by 2020
Joshua Bolkan, Campus Technology

May 31, 2017
Learning is More Digital and Resource Rich
Enticing Students to Read Again
Ellen McCracken, The Chronicle of Higher Education
Digital Dubliners—a guide to Joyce's stories written for students by students, will bring a new reading experience to today's classroom.
https://digitaldubliners.com/about/

July 19, 2017
Hololens Assists in Live Surgery
Tommy Palladino, Next Reality
Video #1: 1:09: http://curtbonk.com/hololens.html
Video #2: 1:17: http://curtbonk.com/hololens2.html

May 18, 2017
Learning is More Immersive
Google Cardboard
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=27seconds http://curtbonk.com/thejournal27.html
38 Seconds http://curtbonk.com/thejournal38.html
1:10: http://curtbonk.com/thejournal.html

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

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 198 percent over the 2015-2020 forecast period and reaching $143.3 billion in 2020."

July 19, 2017
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 share it with remote audiences in real-time, allowing a compound annual growth rate (CAGR) of 198 percent over the 2015-2020 forecast period and reaching $143.3 billion in 2020."

May 18, 2017
Learning is More Immersive
Google Cardboard
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://curtbonk.com/hololens.html
May 14, 2018 (Engagement)
Learning is More Adventurous
Aaron Doering, Chasing Seals, TEDx
http://chasingseals.com/

July 22, 2016 (Engagement)
Learning is More Game-like
When Pokémon Goes to Campus: The Good, the Bad, and the Ugly
Gabriel Sandoval, Chronicle 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 8, 2017
Learning is More Game-like
ShortSims
http://www.shortsims.com/
Clark Aldrich clark@clarkaldrichdesigns.com

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

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/

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

Pokemon Go players converged last week on the U. of Nebraska at Lincoln’s Memorial Stadium, which officials had opened to the animated-monster hunters. The hit augmented-reality game has prompted many colleges to jump on the bandwagon.
August 3, 2017
Learning is More Immediate...
See the exquisite fossil that revealed the colors of a giant armored nodosaur
Ben Gaurino, The Washington Post

May 9, 2017 (Access)
Learning is More Immediate...
Meet Zuul, the new dinosaur species named after 'Ghostbusters' demon
Traci Watson, USA Today

March 27, 2018
Learning is More Immediate...
Ancient Amazon: Discovery of 81 New Archaeological Sites Rewrites History of Americas Before Columbus
Katherine Hignett, Newsweek
http://www.newsweek.com/amazon-rainforest-glyphs-research-columbus-861960

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

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
https://www.universitybusiness.com/article/world-active-learning-higher-ed

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

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

March 18, 2018 (Access)
Learning is Video-Based
EdTech is having a renaissance, powered by the emerging world
Mick Butcher, TechCrunch

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
http://www.onlinelearningsurvey.com/highered.html
November 1, 2017
Learning is More Online (Access)
Indiana University, Office of Online Education

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

May 7, 2014 (Access)
Learning is More Global
CNA - Speaking Exchange (video chats)
https://www.youtube.com/watch?v=Sc5EfwpFOk
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.

May 8, 2018
Free textbooks? Federal government is on track with a pilot program.
https://sparcopen.org/our-work/open-textbooks-fy18/

April 6, 2017 (Access)
Learning is More Free and Open
Indiana University’s eText program saves students over $3.5 million (Program makes digital textbooks cost less and do more, grows 56 percent),
Indiana University Newsroom
https://itnews.iu.edu/articles/2017/indiana-universitys-etext-program-saves-students-over-3.5-million.php

April 6, 2018 (Access)
Learning is More Free and Open
Indiana University’s eText 101: Are your students paying too much for textbooks?
https://sparcopen.org/our-work/open-textbooks-fy18/
December 19, 2017 and April 24, 2018
Learning is More Free and Open
eTexts 101: A Practical Guide
https://iuetexts101.frontmatter/introduction/
https://iuetexts101/

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

September 19, 2017
Learning is More Free and Open
Reasons to Open Source Your Syllabus
Anastasia Salter, The Chronicle of Higher Education
http://www.chronicle.com/blogs/profhacker/reasons-open-source-syllabus/64335

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
http://chronicle.com/article/This-Mongolian-Teenager-Aced-a-MOOC/236362

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)

August 9, 2017
Learning is More Free and Open
Modern State Education Alliance
https://modernstates.org/
May 3, 2017
Learning is More Free and Open
4 out of 5 Companies Have Hired a Coding Bootcamp Graduate
Sri Ravipati, Campus Technology

[Image]

June 20, 2016 (Access)
Learning is More Direct from Experts (e.g., The Expert Café)
http://expertscafe.com/

[Image]

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. The technology combines scheduling, payments, and live virtual sessions that can connect on any device to over 50,000 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/

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

[Diagram]

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

http://www.eschoolnews.com/2017/02/22/alan-november-corpus-christi-middle-school-digit/cbs-news/?all

https://twitter.com/thelivbits
https://www.youtube.com/watch?v=bXjwUE7eBuc
June 13, 2016 (Access)
Learning is Self-Directed
Nine-Year-Old Anvitha Vijay is the Youngest Developer at WWDC (age 9)
(Apple Worldwide Developers Conference), Gadgets

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

July 17, 2017

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

January 9, 2017
Learning is More On Demand
Jill Watson, Round Three

May 9, 2018
Learning is More on Demand
Battle of the Brains:
We asked Google, Alexa and Siri 150 questions to see who’s smartest
Jefferson Graham, USA Today
May 9, 2017 (Customization)
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

February 19, 2018
Erica, the humanoid robot, is chatty but still has a lot to learn
Jefferson Graham, USA Today
Video: http://curtbonk.com/erica.html
Audio: http://curtbonk.com/erica-audio.html

Poll: Who gets blended drinks at Starbucks?

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

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

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
http://chronicle.com/article/250-MOOCs-Counting-One/229397/?cid=at
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.”

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

October 1, 2017
Learning is More Massive
Introduction to Open Education
edX
https://www.edx.org/course/introduction-open-education-utarlingtonx-link-oex

June 15, 2017
Learning is More Massive
Massive List of MOOC Providers Around The World
K-MOOC / Korea
(Where to Find MOOCs: The Definitive Guide to MOOC Providers)
Class Central, Dhawal Shah
https://www.class-central.com/report/mooc-providers-list/

January 11 and August 23, 2017
Learning is More Massive
Topnotch online English teacher earns nearly $3 million a year
Wu Yan, China Daily
http://www.chinadaily.com.cn/china/2017-01/11/content_27920747.htm

March 3, 2017 (Customization)
Learning is More on Modular
edX Expands MicroMasters Programs
With Data Science (“nanodegrees”) Digital Leadership and More, Sri Ravipati, Campus Technology
January 9, 2018
Learning is More on Modular
MIT launches MITx MicroMasters in Principles of Manufacturing
MIT Open Learning

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
https://www.class-central.com/report/master-graduate-ceremony-python-specialization/

MOOCs are Like Library Books...

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

30+ Ways Learning is Changing: Recapping the Three Mega Trends: Engagement, Access, and Customization
Needed: New Models of Motivation and Engagement

Framework #1: TEC-VARIETY for Online Motivation and Retention
1. Tone/Climate: Psych Safety, Comfort, Belonging
2. Encouragement, Feedback: Responsive, Supports
3. Curiosity: Fun, Fantasy, Control
4. Variety: Novelty, Intrigue, Unknowns
5. Autonomy: Choice: Flexibility, Opportunities
6. Relevance: Meaningful, Authentic, Interesting
7. Interactive: Collaborative, Team-Based, Community
8. Engagement: Effort, Involvement, Excitement
9. Tension: Challenge, Dissonance, Controversy
10. Yields Products: Goal Driven, Products, Success, Ownership

Introducing the free “TEC-VARIETY” Framework...
http://tec-variety.com/

Motivation Research Highlights
(Jere Brophy, Michigan State University)
1. Supportive, appropriate challenge, meaningful, moderation/optimal.
2. Teach goal setting and self-reinforcement.
4. Novelty, variety, choice, adaptable to interests.
5. Game-like, fun, fantasy, curiosity, suspense, active.
6. Higher levels, divergence, dissonance, peer interaction.
7. Allow to create finished products.
8. Provide immediate feedback, advance organizers.
9. Show intensity, enthusiasm, interest, minimize anxiety.
10. Make content personal, concrete, familiar.

Examples of TEC-VARIETY

April 3, 2017
1. Tone/Climate: A. Sli.do
   https://www.sli.do/
November 10, 2016
1. Tone/Climate:
B. Threaded Video Discussions and Questions
(e.g., Flipgrid)
http://flipgrid.com/#429f88c5
Flipgrid: The Power of Student Voice

February 8, 2015
2. Encouragement, Feedback:
A. Class Discussion Recap Wordle

2. Encouragement, Feedback:
B. Voice/Audio Feedback
Vocaroo: http://vocaroo.com/
http://vocaroo.com/delete/s0x8moQAYAiu/a37bbc9408bb8c95
(Recorded by Curt Bonk for the Open University of China)

November 29, 2017
3. Curiosity, Surprise, Intrigue, Unknowns:
A. Summary and Comparison Maps
A Map Showing How Much Time It Takes to Learn Foreign Languages: From Easiest to Hardest, Open Culture

January 31, 2018
3. Curiosity, Intrigue, Unknowns:
B. Dinosaur Discoveries
‘Holy Grail’ of dinosaur fossils discovered in Egyptian desert
Doyle Rice, USA Today

April 17, 2017
3. Curiosity, Intrigue, Unknowns:
C. 1st woman to officially run Boston Marathon does it again, 50 years later
Emanuella Grinberg, CNN, USA Today
April 3, 2017  
4. Variety, Novelty, Fun, Fantasy:  
A. Kahoot!  
https://getkahoot.com/  
July 31, 2017  
I'm in 'Kahoots' with Technology in the Classroom  
Cassandra OSullivan Sachar, Faculty Focus

October 5, 2016  
4. Variety, Novelty, Fun, Fantasy:  
B. Online Test/Quiz Review Games  
(e.g., Jeopardy Rocks)  
https://www.jeopardy.rocks/r511merve/

4. Variety, Novelty, Fun, Fantasy:  
C. Random Lists  
(Random.org—clocks, coins, playing cards, dice, integers, passwords, jazz scales, lists, sequences, etc.)

December 8, 2015  
5. Autonomy, Choice:  
A. Design Multimedia Glossaries  
P540 Final Assignment: Nate Wynne, Supersized Personal Course Glossary  
http://natewynne1982.wix.com/p540courseglossary  
Ozgur Ozdemir, December 2012  
http://r685glossary.shutterfly.com/  
Umida Khikmatillaeva, Dec. 2011, P540  
http://learningplanet.shutterfly.com/

July 26, 2017  
5. Autonomy, Choice:  
B. Sign up for a MOOC  
Beer Matters: Free Online Class With Meetups  
(September 6, 2017—October 21, 2017),  
Karl Brown, Assistant Professor of History  
http://www.uww.edu/ce/beer-matters  
http://www.gazettextra.com/20150921/uw_whitewater_teacher_explores_links_between_germans_beer_politics  
brownk@uww.edu  
Video: http://curtbonk.com/beer.html (1:11)

Jan. 20, Oct. 13, & Nov. 2016 (Zoom)  
6. Relevance, Meaningfulness:  
A. Weekly Guest Expert Chats  
RS11 Chat with Mike Molenda, IU
6. Relevance, Meaningfulness:
B. Case-Based Learning: Instructor Cases
(e.g., Mark Braun, IU)

7. Interactive, Collaborative:
A. Guest Speaker Quotes
(Rey Junco, February 25, 2013)

7. Interactive, Collaborative:
C. Backchannel Chat
(TodaysMeet)
https://todaysmeet.com/
R678_Emerging_Learning_Technologies
https://todaysmeet.com/R678_Emerging_Learning_Technologies

7. Interactive, Collaborative:
C. Backchannel Chat
(TodaysMeet)
https://todaysmeet.com/
R678_Emerging_Learning_Technologies
https://todaysmeet.com/R678_Emerging_Learning_Technologies

8. Engagement, Involvement:
A. Learning Chemistry in Virtual Reality,
Sarah Hardman, New Learning Times
01:38 video: https://vialogues.com/vialogues/play/38337/
All: http://curtbonk.com/chemistry-vr.html
01:41 - 1:16: http://curtbonk.com/chemistry-vr-1.html

March 20, 2018
6. Relevance, Meaningfulness:
C. Editing Wikipedia Pages
Women’s-Studies Students Across the Nation Are Editing Wikipedia
Emma Kerr, The Chronicle of Higher Education

Samantha Erickson, left, of the Wiki Education Foundation; Tina Brock, a dean of the School of Pharmacy at UC San Francisco; and professor Amin Azzam discuss implementing the integration of Wikipedia pages on medical topics with students’ work.

7. Interactive, Collaborative:
B. Negotiate Meanings Online
(e.g., PiratePad: http://meetingwords.com/)
MeetingWords, Google Docs, NowComment, MixedInk

7. Interactive, Collaborative:
B. Negotiate Meanings Online
(e.g., PiratePad: http://meetingwords.com/)
MeetingWords, Google Docs, NowComment, MixedInk

July 17, 2017
8. Engagement, Involvement:
A. Learning Chemistry in Virtual Reality,
Sarah Hardman, New Learning Times
01:38 video: https://vialogues.com/vialogues/play/38337/
All: http://curtbonk.com/chemistry-vr.html
01:41 - 1:16: http://curtbonk.com/chemistry-vr-1.html
8. Engagement, Involvement:
B. Interactive Labs and Simulations
http://phet.colorado.edu/en/simulation/energy-skate-park

February 14, 2018
8. Engagement, Involvement:
C. Maps
This map shows where more Americans are willing to support free speech

July 28, 2017
9. Tension, Challenge, Controversy, etc.:
A. Modern medicine breathes new life into virtual training

February 28, 2018
9. Tension, Challenge, Controversy, etc.:
B. Reflect on and Debate News
Did Homo erectus speak?
Daniel Everett, Bentley University, Aeon
http://aeon.co/essays/tools-and-voyages-suggest-that-homo-erectus-invented-language

9. Tension, Challenge, Controversy, etc.:
c. Controversial Issues Online Debates
Yes, Mr. President, We Remade Our Atlas to Reflect Shrinking Ice
Christine Dell’Amore, National Geographic, August 3, 2015

10. Yields Products, Goals:
A. Database Collection Tools
Design Article Database in Pinterest,
Meina Zhu and Jennifer Weebeck
### September 3, 2017
Yields Products, Goals:

B. Mindmap Recaps of Online Discussions

Mindmap of Week 2 of R511

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### March 12, 2016
10. Yields Products, Goals:

C. Student Generated Timelines, Taxonomies, and Concept Maps

R678 John Falchi, *Timeglider, An Abbreviated History of Distance Education*

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### TEC-VARIETY Recap

What motivates?

1. Time
2. Climate
3. Psychological Safety
4. Comfort
5. Sense of Belonging
6. Understanding
7. Interactivity
8. Collaboration
9. Team-based, Community
10. Relevance

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### Model #2: The R2D2 Model:

Read, Reflect, Display, Do...

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### The R2D2 Method

1. Read (Auditory and Verbal Learners)
2. Reflect (Reflective Learners)
3. Display (Visual Learners)
4. Do (Tactile, Kinesthetic, Exploratory Learners)

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**1. Auditory or Verbal Learners**

- Auditory and verbal learners prefer words, spoken or written explanations.
February 14, 2018
Read 1a. Reading Online News
Tracing the tangled tracks of humankind's evolutionary journey
Hannah Devlin, The Guardian

February 11, 2018
Read 1b. Online Referenceware
The Magical Power of Dictionaries
Alberto Manguel, The Chronicle of Higher Education
https://www.chronicle.com/article/The-Magical-Power-of-Dictionaries/242513

May 28, 2015
Read 1c. Immediate Science and Open Access Science
Ancient jawbones put new species on the human family tree, researchers say,
Laura Smith-Spark, CNN

Reflect 2a. Interpreting Interactive Graphs and Infographics
How much rainforest in that chocolate bar?
Global Forest Watch, Nancy Harris, Octavia Payne and Sarah Mann
http://blog.globalforestwatch.org/2015/08/how-much-rainforest-is-in-that-chocolate-bar/

Reflect 2b. Big Issue Reflections
(Big Questions Online (BQO)), Feb 3, 2015
(e.g., Can a Living Creature Be as Big as a Galaxy?)
https://www.bigquestionsonline.com/
October 6, 2016
Reflect 2c. What-if Reflections
What if Aaron Burr had missed Alexander Hamilton?, Thomas Fleming, CNN

3. Visual Learners
• Visual learners prefer diagrams, flowcharts, timelines, pictures, films, and demonstrations.

Display 3a. Virtualize Words Used (e.g., Wordle, Taggedo, Tagul, WordSift, Word It Out)

March 2, 2016
Display 3b. Weekly 1 minute Video Updates (e.g., Pinkcasts from Daniel Pink)
http://www.danpink.com/pinkcast/

January 8, 2017
Display 3c. Summary and Comparison Maps
#GeoawesomeMapOfTheDay
https://twitter.com/geoawesomeevents
https://www.instagram.com/p/BNwgvJfDAq3/
https://twitter.com/hashtag/GeoawesomeMapOfTheDay?src=hash

4. Tactile/Kinesthetic Learners
• Tactile/kinesthetic senses can be engaged in the learning process are role play, dramatization, cooperative games, simulations, creative movement and dance, multi-sensory activities, manipulatives and hands-on projects.
December 12, 2017
Do 4a. Online Website and Video Recaps
R511 Student Final Projects
Matthew Willey: https://sway.com/QGdiCv7p64DFBe8A?ref=Link
Rachael Zehrer Kiami: https://rzeiher.wixsite.com/rzeiherhome

Do 4b. Student Website Development
R511 Final Projects, April 2016
IT and HPT Comparison (Website), Doug Hsu
http://dougandindira.wix.com/r511finalproject
http://mervebasdogan.wixsite.com/511final

March 11, 2018
Do 4c. PBL in Puerto Rico
https://sites.google.com/iu.edu/pbl-in-puerto-rico/home

Poll: Which Model or Framework do you Prefer?
http://tec-variety.com/

Poll: Who now wants one of these?
Starbucks

WHAT'S NEXT
Final Poll: Who is now interested in Education 20/20...?

END OF COURSE EXAMS?
I SHALL PASS!

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

Things are heating up...

Education 20/20 is coming within reach!

Remember for Education 20/20 to make an impact:
“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