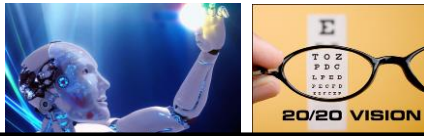


Workshop: Education 20/20: En"vision"ing the LAST Principles You'll Ever Need (15:10-17:00)

Curtis J. Bonk, Professor, Indiana University
cjbonk@indiana.edu
<http://curtbonk.com/>



Talk Overview

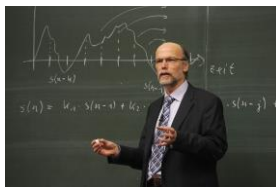
1. Education 20/20 and the Role of the Instructor
2. First and Last Principles of Instruction
3. 4 E-Learning Ages
4. Megatrends of Learning: Engagement, Access, and Customization (30 ways that learning is changing...)
5. Future Trends and Ideas



Education 20/20



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
<http://firstmonday.org/issue/index.php/firstmonday/article/view/1625/1540>

EDUCATION 3.0

Characteristics	Education 1.0	Education 2.0	Education 3.0
Primary role of professor	Source of knowledge	Guide and source of knowledge	Orchestrator of collaborative knowledge creation
Content arrangements	Traditional copyright materials	Copyright and freeware educational resources for students within disciplines, sometimes across institutions	Free/open educational resources created and reused by students across multiple institutions, disciplines, nations, implemented by original materials created for them
Learning activities	Traditional, essays, assignments, tests, some groupwork within classroom	Traditional assignment approaches transferred to more open technologies; increasing collaboration in learning activities, still largely confined to institutional and classroom boundaries	Open, flexible learning activities that focus on creating room for student creativity, social networking outside traditional boundaries of discipline, institution, nation

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 Consumer Advocate
 Counselor Curator
 Conductor Concierge Cook Change Catalyst
 Consultant Camping Trip Guide Comedian
 Community Organizer Course Expedition Leader Coach
 Chemist Collaborator
 Cultivator Care Giver
 Colleague



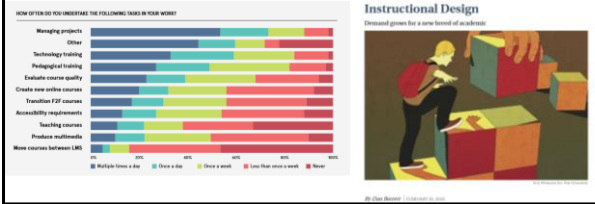
The Creation of Effective Learning Environments

<http://study.com/academy/lesson/learning-environment-in-the-classroom-definition-impact-importance.html>



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

<http://intentionalfutures.com/reports/instructional-design/instructional-design-2016-report-5-2016-edition-5-2016.html>
http://intentionalfutures.com/reports/instructional_design/



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.

Poll: Who wants one of these? Starbucks



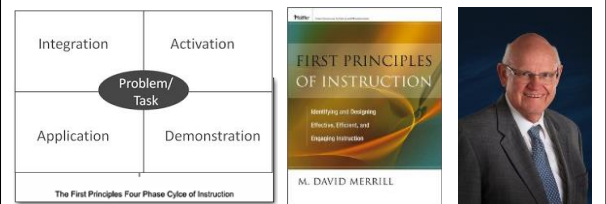
Bonk's 20 Last Principles of Teaching/Instruction

<http://travelindman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



Merrill's First Principles of Teaching/Instruction

<http://travelindman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



1. The Principle of Flexibility

<http://travellinedman.blogspot.com/2011/05/books-last-principles-of-instruction.html>



2. The Principle of Convenience

<http://travellinedman.blogspot.com/2011/05/books-last-principles-of-instruction.html>



3. The Principle of Collegiality

<http://travellinedman.blogspot.com/2011/05/books-last-principles-of-instruction.html>



4. The Principle of Cheerfulness and Optimism

<http://travellinedman.blogspot.com/2011/05/books-last-principles-of-instruction.html>



5. The Principle of High Expectations

<http://travellinedman.blogspot.com/2011/05/books-last-principles-of-instruction.html>



6. The Principle of Choice and Options

<http://travellinedman.blogspot.com/2011/05/books-last-principles-of-instruction.html>



7. The Principle of Empowerment and Autonomy

<http://travellinedman.blogspot.com/2011/05/bunks-last-principles-of-instruction.html>



August 8, 2017 Professor's plan to let students grade themselves gets an F Paul LeBlanc, CNN

<http://www.cnn.com/2017/08/08/health/students-choose-grades-stress-reduction-tnad/index.html>

Professor's plan to let students grade themselves gets an F



U. of Georgia Prevents Professor From Including 'Stress-Reduction Policy' in Syllabus

The University of Georgia has prevented a business professor from including a "stress-reduction policy" in his course syllabus, but would have allowed students to choose their own grades and classroom group work and savings without explanation.

8. The Principle of Support and Feedback

<http://travellinedman.blogspot.com/2011/05/bunks-last-principles-of-instruction.html>



9. The Principle of Spontaneity

<http://travellinedman.blogspot.com/2011/05/bunks-last-principles-of-instruction.html>



10. The Principle of Organization

<http://travellinedman.blogspot.com/2011/05/bunks-last-principles-of-instruction.html>



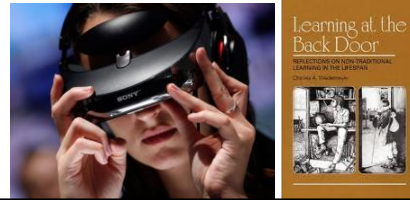
11. The Principle of Sharing

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



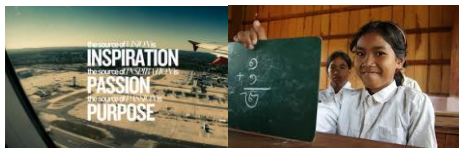
12. The Principle of Nontraditional Learning

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



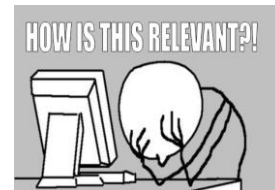
13. The Principle of Passion and Inspiration

<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


TEN OPENERS: (WE-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 Communities
7. Electronic Collaboration
8. Alternate Reality Learning
9. Real-Time Mobility and Portability
10. Networks of Personalized Learning

世界是开放的
网络技术如何变革教育
The World Is Open
How Web Technology Is Revolutionizing Education
Curtis J. Bonk


17. The Principle of Human Connectedness

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



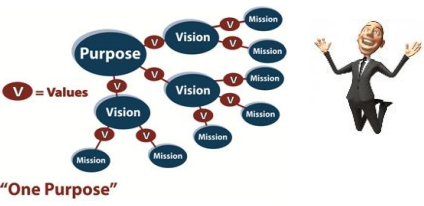
18. The Principle of Cognitive Apprenticeship

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

19. The Principle of Purpose and Vision

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



“One Purpose”

20. ??? (what is missing)

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




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

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

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

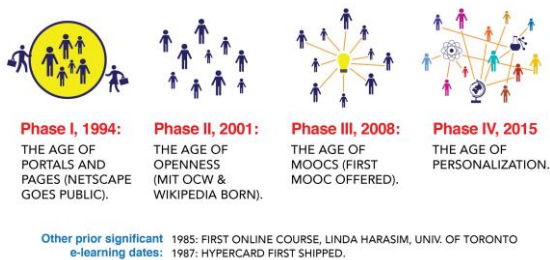
#20 ???



Clearly... Learning is Changing!



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

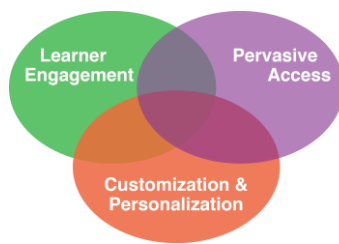


Thirty Ways Learning is Changing...

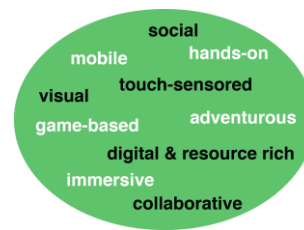
(i.e., it's more informal, video-based, ubiquitous, collaborative, self-directed, global, mobile, open, massive, etc.)



30+ Ways Learning is Changing: The Mega Trends



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
<https://campustechnology.com/articles/2016/08/17/report-3d-printing-market-to-double-by-2020.aspx>

Research: 3D Printing Market to Double by 2020
 By Joshua Bolkan | 08/17/16




February 7, 2017 (Engagement)
Learning is More Social
 YouTube takes on Facebook with mobile live
 Jefferson Graham, USA Today
<http://www.usatoday.com/story/tech/2017/02/07/youtube-takes-facebook-mobile-live/97566592/>

YouTube takes on Facebook with mobile live



May 31, 2017
Learning is More Digital and Resource Rich
Enticing Students to Read Again
 Ellen McCracken, The Chronicle of Higher Education
<http://chronicle.com/article/Enticing-Students-to-Read-Again/236487>

Digital Dubliners—a guide to Joyce's stories written for students by students, will bring a new reading experience to today's classroom.
<http://www.digitaldubliners.com/about>




February 27, 2017 (Engagement)
Learning is More Immersive
Augmented and Virtual Reality Spending to Double in 2017, Sri Ravipati, THE Journal
<https://thejournal.com/articles/2017/02/27/augmented-and-virtual-reality-spending-to-double-in-2017.aspx>
 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 196 percent over the 2015-2020 forecast period and reaching \$143.3 billion in 2020."




July 19, 2017
HoloLens Assists in Live Surgery
 Tommy Palladino, Next Reality
<https://hololens.reality.news/news/hololens-assists-live-surgery-9178887/>
 Video #1: 1:09: <http://curtbonk.com/hololens.html>
 Video #2: 1:37: <http://curtbonk.com/hololens2.html>
 07/19/2017

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 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.
 Original Video: <https://hololens.reality.news/news/hololens-assists-live-surgery-9178887/>



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=ST5aB9W7Y9>
 27 seconds <http://curtbonk.com/thejournal27.html>
 38 seconds <http://curtbonk.com/thejournal38.html>
 1:10: <http://curtbonk.com/thejournal.html>



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

Video (2:33): <http://curtbonk.com/dinosaurs.html>

Video: 0:1 - 2:0: <https://curtbonk.com/dinosaurs2.html>

Video: :47 to 2:26: <http://curtbonk.com/dinosaurs3.html>

Titanosaurs:

the largest animals ever to walk the Earth

<https://www.theguardian.com/science/2016/jan/12/dinosaur-titanosaur-largest-animal-ever-walk-earth-argentina>

https://www.youtube.com/watch?v=Q0u6tL3_A_w

**May 9, 2017 (Access)****Learning is More Immediate...**

Meet Zuul, the new dinosaur species named after 'Ghostbusters' demon

Traci Watson, USA Today

<https://www.usatoday.com/story/news/2017/05/09/new-dinosaur-ghostbusters/101475468/>

15 second: <http://curtbonk.com/ghostbusters15.html>

27 second: <http://curtbonk.com/ghostbusters27.html>

Meet Zuul, the new dinosaur species named after 'Ghostbusters' demon

**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>

Video (1:20)

ANCIENT AMAZON: DISCOVERY OF 81 NEW ARCHAEOLOGICAL SITES REWRITES HISTORY OF AMERICAS BEFORE COLUMBUS

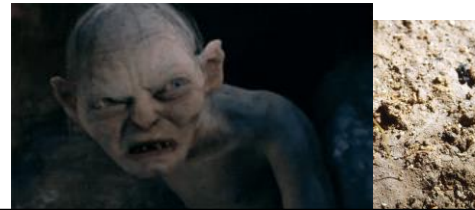


81 Amazon Settlements Discovered in Rainforest

**November 19, 2015 (Access)****Learning is More Immediate...**

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

<http://www.usatoday.com/story/tech/2015/11/19/new-daddy-longlegs-named-after-lord-of-the-rings-character-smeagol/78037286/>



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

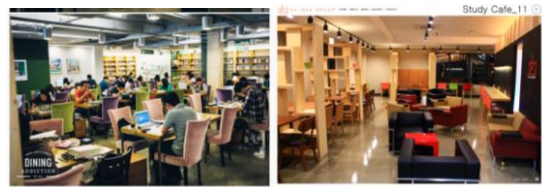
informal
free
open
synchronous
online
immediate
global
video-based
ubiquitous
direct from experts

August 1, 2016 (Access)**Learning is More Ubiquitous**

363 by Idea Group; Study Café Meeting Place; Idea Space (Seoul, Korea)

http://363.co.kr/wp/?page_id=344

http://363.co.kr/wp/?wp_gallery=study-cafe_11



April 16, 2018**Learning is More Informal**

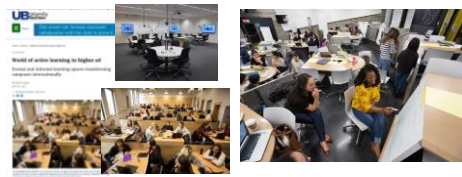
World of active learning in higher ed
Formal and informal learning spaces transforming
campuses internationally

Sherrie Negrea, University Business, May 2018
<https://www.universitybusiness.com/article/world-active-learning-higher-ed>

**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

<http://sports.ndtv.com/golf/2015/08/05/shubham-jaglan-overwhelmed-by-dream-returns-home-after-double-world-championship>
<https://www.ndtv.com/sports/shubham-jaglan-returns-home-after-double-world-championship-222164>

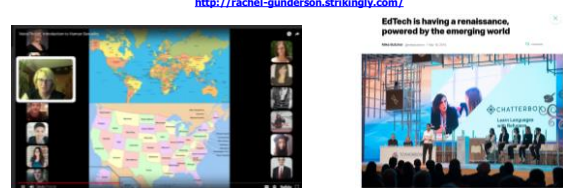
**March 18, 2018 (Access)****Learning is Video-Based**

EdTech is having a renaissance, powered by the emerging world
Mick Butcher, TechCrunch

<https://techcrunch.com/2018/03/18/edtech-is-having-a-renaissance-powered-by-the-emerging-world>

March 20, 2018

Rachel Gunderson, Human Sexuality Class, VoiceThread
<http://rachel-gunderson.strikingly.com/>

**February 15, 2017 (Engagement)****Learning is More Synchronous**

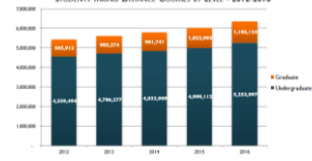
Shindig, Future Trends Forum, Bryan Alexander
<https://bryanalexander.org/the-future-trends-forum/>
<http://www.shindig.com/>
<http://events.shindig.com/event/rtf-anniversary>

**February 19, 2018****Learning is More Online (Access)**

Grade Increase:
Tracking Distance Education in the United
States

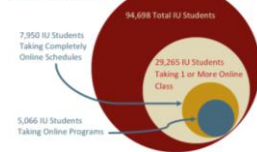
Joshua Kim, Inside Higher Ed
<https://onlinelearningquarter.com/news/grade-increase.pdf>
<https://onlinelearningquarter.com/news/grade-increase.pdf>

STUDENTS TAKING DISTANCE COURSES BY LEVEL - 2012-2016



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

Fall 2017
Online Education at IU



*Starting in fall 2017, ACP students are excluded from counts.

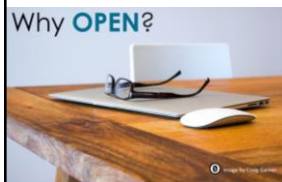


May 7, 2014 (Access) Learning is More Global

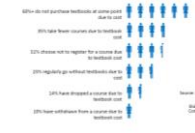
CNA - Speaking Exchange (video chats)
<https://www.youtube.com/watch?v=S-5EfwF0k>
FCB Brazil and the CNA language school network are launching the Speaking Exchange project, which connects CNA students in Brazil with Americans living in retirement homes.



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.ocis.ca/events/open-education-ontario-summit>



There is a direct relationship between textbook costs and student success



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://news.iu.edu/articles/2017/indiana-universitys-eText-program-saves-students-over-3.5-million.php>



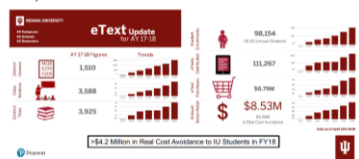
May 8, 2018 Free textbooks? Federal government is on track with a pilot program. Danielle Douglas-Gabriel, The Washington Post <https://sparcopen.org/our-work/open-textbooks-fy18/>

Free textbooks? Federal government is on track with a pilot program.



April 6, 2018 (Access) Learning is More Free and Open Indiana University's eText 101: Are your students paying too much for textbooks? <https://www.washingtonpost.com/news/education/wp/2018/04/06/indiana-universitys-eText-101-are-your-students-paying-too-much-for-textbooks/>

Indiana University eText Initiative
Impact



December 19, 2017 and April 24, 2018 Learning is More Free and Open

eTexts 101: A Practical Guide

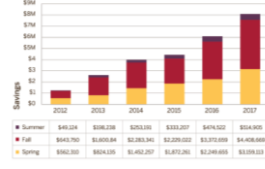
<https://iu.pb.unizin.org/eTexts101/front-matter/introduction/>

<https://iu.pb.unizin.org/eTexts101/>

OER Adoptions on the Rise



Cost savings for students participating in IU's eTexts Program



Real cost savings for students participating in IU's eTexts Program

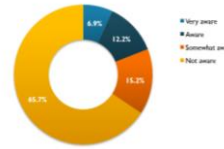
July 2016

The Awareness Problem: Opening the Textbook: Educational Resources in U.S. Higher Education, 2015-2016

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

<http://www.onlinelearningtimes.com/reports/openingthetextbook2016.pdf>

AWARENESS OF OPEN TEXTBOOKS: 2015-16



OER Use to Triple Over Next 5 Years

Open educational resources (OER) are rapidly gaining momentum in higher education, with the potential to triple use over the next five years. Based on a survey of 10,000 higher education faculty, the use of OER for instructional materials is expected to grow significantly in the coming years.

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-to-open-source-your-syllabus/64335>

The Open Syllabus Project: <https://opensyllabusproject.org/>



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>

THE CHRONICLE OF HIGHER EDUCATION

Home News Global Updates & Issues Faculty & Figures Blogs & Advice Forums

TECHNOLOGY

This Mongolian Teenager Aced a MOOC. Now He Wants to Widen Their Impact.

By Jeffrey R. Young | May 4, 2016



This is the latest episode of our new podcast series on the future of higher education. You can subscribe to iTunes to get prior and future episodes.

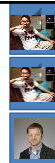
May 19, 2016 (Access)

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)

<http://news.mit.edu/2016/mooc-bootcamp-mit-0519>



August 9, 2017

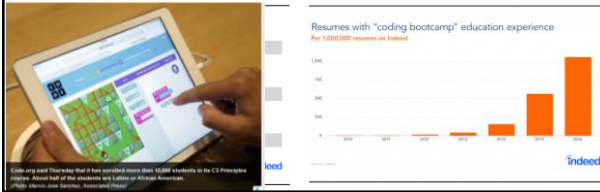
Learning is More Free and Open

Modern State Education Alliance

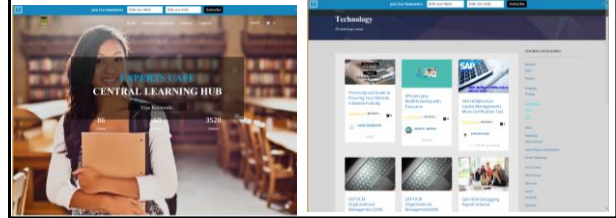
<https://modernstates.org/>



May 3, 2017
Learning is More Free and Open
4 out of 5 Companies Have Hired a Coding
Bootcamp Graduate
Sri Ravipati, Campus Technology



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



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 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/>



September 25, 2017
Learning is More Direct from Experts
Professors Have Taken Over the MOOCs:
How open online learning is changing
Joshua Kim, Inside Higher Ed

<https://www.insidehighered.com/blogs/technology-and-learning/professors-have-taken-over-moocs>



How Learning is Changing:
Mega Trend #3. Customization



February 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/re-digital-citizenship-twitter/>
<http://www.eschoolnews.com/2017/02/22/re-digital-citizenship-twitter/>
<https://twitter.com/AlanNovember>
<https://www.youtube.com/watch?v=8KwU7e8u8c>



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

<http://www.usatoday.com/story/money/2016/06/13/stocks-new-high/899905001/>

**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**

Buildings That Foster Collaboration, Lawrence Biemiller, The Chronicle of Higher Education
<https://www.usatoday.com/story/money/2017/07/20/stocks-new-high/899905001/>

Buildings That Foster Collaboration
By Lawrence Biemiller | July 17, 2017 | 4 min read



Social spaces, like this one in an interdisciplinary science building at Arizona State U, don't qualify for federal reimbursement of research-overhead costs. So now "we don't build any single-purpose space," says the university architect.

March 2, 2018

The Architecture of Ideal Learning Environments
Emelina Minero, Edutopia

<https://www.edutopia.org/article/architecture-ideal-learning-environments>

**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>

**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

<http://www.usatoday.com/story/tech/2018/05/09/alexa-google-siri-smartest/1082240001/>
<http://en.usatoday.com/Opinion/USATSample/Android.aspx>



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/2017/05/09/amazon-echo-show-two-way-video-touchscreen/101448894/>

24 seconds: <http://curtbonk.com/jetsons24.html>

44 seconds: <http://curtbonk.com/jetsons44.html>

Amazon Echo Show brings chatty Alexa to a two-way, video touchscreen



February 19, 2018

Erica, the humanoid robot, is chatty but still has a lot to learn

Jefferson Graham, USA Today

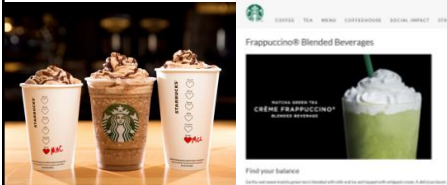
<https://www.usatoday.com/story/tech/talktech/2018/02/19/erica-humanoid-robot-chatty-but-still-has-a-lot-to-learn/1012280002/>

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

<http://www.chicagotribune.com/business/ct-college-craft-beer-offer-classes-20160120-story.html>

Universities tap growth of craft beer, offer classes



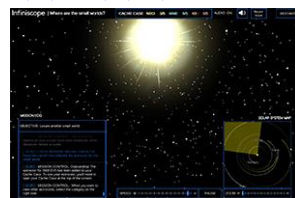
March 23, 2017 (Customization)

Learning is More Personal

Arizona State U Launches Open, Adaptive Lessons on Space Exploration

Rhea Kelly, Campus Technology

<https://campustechnology.com/articles/2017/03/23/arizona-state-u-launches-open-adaptive-lessons-on-space-exploration.aspx>



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-MOOCsCounting-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 Raghathan

<https://www.class-central.com/mooc/2860/courses-a-life-of-happiness-and-fulfillment>



A Life of Happiness and Fulfillment
Indian School of Business, Rajagopal Raghathan
This course, based on the award-winning book offered both at the Indian School of Business and at the McCombs School of Business at the University of Texas at Austin, developing that the happiness and life. The course is a journey from a variety of fields, including psychology, neuroscience, and behavioral decision theory to offer a personal and practical design for leading a life of happiness and fulfillment.



A Life of Happiness and Fulfillment

October 1, 2017

Learning is More Massive

Introduction to Open Education
edX

<https://www.edx.org/courses/introduction-to-open-education-uta/edx-link-us>

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/course/kmooc-providers-2017>

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

<https://campustechonline.com/2017/03/03/edx-expands-micromasters-programs-with-data-science-digital-leadership-and-more/>

edX Expands MicroMasters Programs With Data Science, Digital Leadership and More

By Sri Ravipati | 03/03/17



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

<http://news.mit.edu/2018/mit-launches-new-mitx-micromasters-program-principles-manufacturing-0109>



MIT launches MITx MicroMasters in Principles of Manufacturing
 New program offers alternative learning pathway to mastering fundamental skills needed for global manufacturing operations and competitiveness.

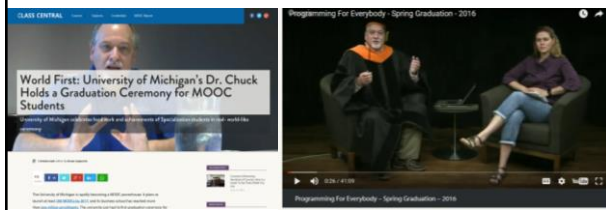
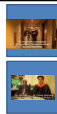
July 1, 2015 (Customization)
Chapter 14: Creating a Temporary Spontaneous
Mini-Ecosystem through a MOOC
Paul Kim and Charlie Chung, Stanford University
Figure 2. Twitter thread announcing the MOOC



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/dr-chuck-graduation-ceremony-python-specialization/>

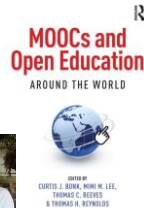


MOOCs are Like Library
Books...



MOOCs and Open Education
Around the World

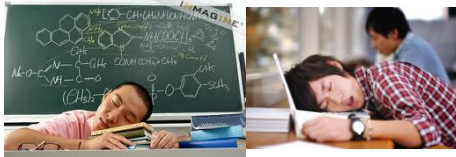
<http://routledge-ny.com/books/details/9781138807419/>



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/>
<http://tec-variety.com/TEC-VARIETY-Chinese.pdf>



在线学习动机与激励: TEC-VARIETY 模型

——激励和留住在线学习者的 100 个活动

作者: Curtis J Bonk & Elaine Khoo

Motivation Research Highlights (Jere Brophy, Michigan State University)

1. **Supportive**, appropriate **challenge**, **meaningful**, moderation/optimal.
2. Teach **goal** setting and self-reinforcement.
3. Offer **rewards** for good/improved performance.
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

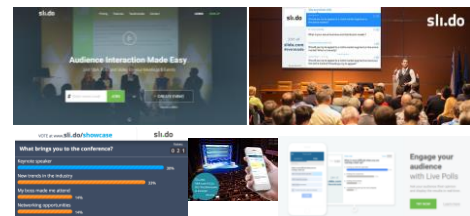


April 3, 2017

1. Tone/Climate:

A. Sli.do

<https://www.sli.do/>



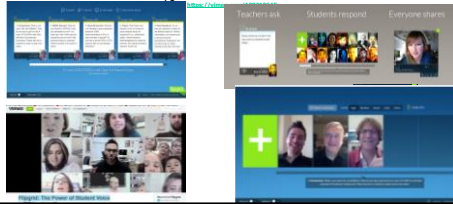
November 10, 2016

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/s0x8moQAYAtu/a37bbc9408bb8c95>
(Recorded by Curt Bonk for the Open University of China)



November 29, 2017

3. Curiosity, Surprise, Intrinsic, Unknowns:

A. Summary and Comparison Maps

A Map Showing How Much Time It Takes to Learn Foreign Languages: From Easiest to Hardest, Open Culture

<http://www.openculture.com/2012/11/16/map-showing-how-much-time-it-takes-to-learn-foreign-languages-from-easiest-to-hardest.html>



January 31, 2018
3. Curiosity, Intrinsic, Unknowns:

B. Dinosaur Discoveries

'Holy Grail' of dinosaur fossils discovered in Egyptian desert

Doyle Rice, USA Today

<https://www.usatoday.com/story/news/science/2018/01/31/egypt-dinosaur-fossil-discovery/487415001/>



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

April 17, 2017

3. Curiosity, Intrinsic, Unknowns:

C. 1st woman to officially run Boston Marathon does it again, 50 years later

Emanuella Grinberg, CNN, USA Today

<http://www.cnn.com/2017/04/17/us/boston-marathon-katherine-saito/index.html>

July 16, 2017

<http://theatlantic.com/health/archive/2017/04/17/boston-marathon-katherine-saito/520448/>

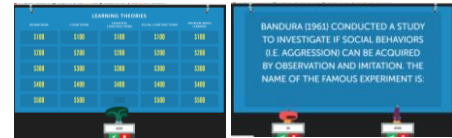


April 3, 2017**4. Variety, Novelty, Fun, Fantasy:****A. Kahoot!**<https://getkahoot.com/>**July 31, 2017**

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.rockz/r511merv/>**4. Variety, Novelty, Fun, Fantasy:****C. Random Lists**

(Random.org—clocks, coins, playing cards, dice, integers, passwords, jazz scales, lists, sequences, etc.)

RANDOM.ORG

Coin Flipper

You flipped 2 coins of type 100-KC:



Timestamp: 2011-08-13 04:42:47C

[Flip Again](#) [Coin Back](#)

Dice Roller

You rolled 2 dice:



Timestamp: 2011-08-13 04:42:47C

[Roll Again](#) [Go Back](#) [Reset](#) [Coin Back](#)**RANDOM.ORG**

List Randomizer

There were 10 items in your list. Here they are in random order:

[Random Sequence Generator](#)

What is your list?

1. 100-KC
2. 100-KC
3. 100-KC
4. 100-KC
5. 100-KC
6. 100-KC
7. 100-KC
8. 100-KC
9. 100-KC
10. 100-KC

Timestamp: 2011-08-13 04:42:47C

[Randomize](#) [Go Back](#) [Reset](#) [Coin Back](#)[Randomize](#) [Go Back](#) [Reset](#) [Coin Back](#)**December 8, 2015****5. Autonomy, Choice:****A. Design Multimedia Glossaries**

P540 Final Assignment: Nate Wynne, Supersized Personal Course Glossary

<http://natewynne1982.wik.com/p540courseglossary>

Oguz Ozdemir, December 2012

<http://r68sglossary.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.guestlectures.com/20150921/now_withoutbeer_beach_sapientia_sims_between_germans_beer_politicshttp://www.guestlectures.com/20150921/now_withoutbeer_beach_sapientia_sims_between_germans_beer_politicsVideo: <http://courtoons.com/beer.html> (1:11)**Jan. 20, Oct. 13, & Nov. 2016 (Zoom)****6. Relevance, Meaningfulness:****A. Weekly Guest Expert Chats**

R511 Chat with Mike Molenda, IU



6. Relevance, Meaningfulness: B. Case-Based Learning: Instructor Cases (e.g., Mark Braun, IU)



March 20, 2018 6. Relevance, Meaningfulness: C. Editing Wikipedia Pages Women's-Studies Students Across the Nation Are Editing Wikipedia

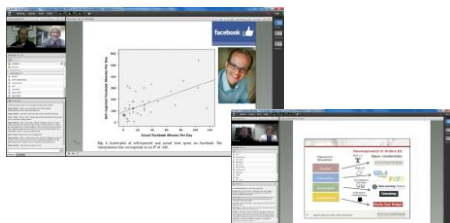
Emma Kerr, The Chronicle of Higher Education
<https://www.chronicle.com/article/Women-s-Studies-Students-242866>



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



7. Interactive, Collaborative: B. Negotiate Meanings Online (e.g., PiratePad: <http://meetingwords.com/>) <https://blogs.etsu.edu/technology/6-collaborative-writing-applications-for-groups-projects-or-groups/> MeetingWords, Google Docs, NowComment, MixedInk



7. Interactive, Collaborative: C. Backchannel Chat (TodayMeet)

<https://todaysmeet.com/>
R678_Emerging_Learning_Technologies
https://todaysmeet.com/R678_Emerging_Learning_Technologies



July 17, 2017 8. Engagement, Involvement: A. Learning Chemistry in Virtual Reality, Sarah Hardman, New Learning Times

<https://newlearningtimes.com/cms/article/4319/learning-chemistry-in-virtual-reality>
1:38 video: <https://vimeo.com/141040541>
Alt: <http://curtbank.com/chemistry-vr.html>
01-41: <http://curtbank.com/chemistry-vr-2.html>
41-1:16: <http://curtbank.com/chemistry-vr-3.html>
1:16-1:36: <http://curtbank.com/chemistry-vr-4.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
The Monkey Cage, The Washington Post



July 28, 2017

9. Tension, Challenge, Controversy, etc.:

A. Modern medicine breathes new life into virtual training

<https://www.sasidaily.com/videos/tech/2017/07/28/modern-medicine-breathes-new-life-into-virtual-training/16497493/>

Videos

2:34 (entire video): <http://curtbonk.com/vr-medicine4b.html>
 .01-.21: <http://curtbonk.com/vr-medicine.html>
 .37-.56: <http://curtbonk.com/vr-medicine2.html>
 .57-1.29: <http://curtbonk.com/vr-medicine3.html>
 1:30-2:27: <http://curtbonk.com/vr-medicine4.html>



February 28, 2018

9. Tension, Challenge, Controversy, etc.:

B. Reflect on and Debate News

Did Homo erectus speak?

Daniel Everett, Bentley University, Aeon

<https://www.aeon.co/essays/erect-and-voyage-suggest-that-homo-erectus-spoke-a-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

<https://www.nationalgeographic.com/magazine/august-2015/yes-mr-president-we-remade-our-atlas-to-reflect-shrinking-ice/>



10. Yields Products, Goals:

A. Database Collection Tools

Design Article Database in Pinterest,

Meina Zhu and Jennifer Weebeck

<https://www.pinterest.com/shumeina0000/r-678-emerging-learning-technology/>

<https://www.pinterest.com/jenniferweebeck/emerging-learning-technologies/>



September 3, 2017

Yields Products, Goals:

B. Mindmap Recaps of Online Discussions

Mindmap of Week 2 of R511

<https://www.mindmap.com/online-discussions/week-2-of-r511>



March 12, 2016

10. Yields Products, Goals:

C. Student Generated Timelines,

Taxonomies, and Concept Maps

R578 John Falchi, Timeglider, An Abbreviated History of Distance Education

<http://timeglider.com/>



TEC-VARIETY Recap



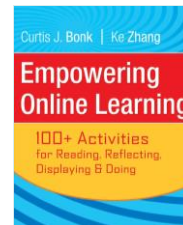
What motivates?

1. **Tone/Climate:** Psychological Safety, Comfort, Sense of Belonging
2. **Encouragement:** Feedback, Responsiveness, Praise, Supports
3. **Curiosity:** Surprise, Intrigue, Unknowns
4. **Variety:** Novelty, Fun, Fantasy
5. **Autonomy:** Choice, Control, Flexibility, Opportunities
6. **Relevance:** Meaningful, Authentic, Interesting
7. **Interactivity:** Collaborative, Team-Based, Community
8. **Engagement:** Effort, Involvement, Investment
9. **Tension:** Challenge, Dissonance, Controversy
10. **Yielding Products:** Goal Driven, Purposeful Vision, Ownership

在线学习动机与激励:
TEC-VARIETY 模型

——美国密西根州立大学 2016 年 7 月出版

Model #2: The R2D2 Model: Read, Reflect, Display, Do...



The R2D2 Method

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



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

<https://www.theguardian.com/news/2018/feb/12/tracing-the-tangled-tracks-of-humankinds-evolutionary-journey>

February 11, 2018

Read 1b. Online Referenceware**The Magical Power of Dictionaries**

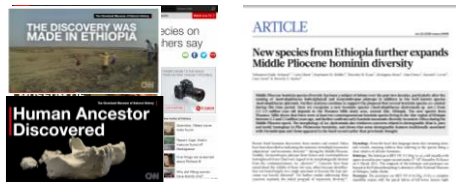
Alberto Manguel, The Chronicle of Higher Education

<https://www.chronicle.com/article/The-Magical-Power-of/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

<http://www.cnn.com/2015/05/28/afrika/ethiopia-fossil-hominin-ancestor/index.html>
<http://www.cnn.com/2015/05/28/afrika/ethiopia-fossil-hominin-ancestor/index.html>
<http://www.nature.com/nature/journal/v521/n7553/full/nature14448.html>
**2. Reflective and Observational Learners**

- Reflective and observational learners prefer to reflect, observe, view, and watch learning; they make careful judgments and view things from different perspectives



April 13, 2016

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://www.globalforestwatch.org/2015/08/how-much-rainforest-is-in-that-chocolate-bar/>

Land-Use Change Emissions in Miles Driven

<http://bit.ly/rainforest-chocolate>

WORLD RESOURCES INSTITUTE

**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/))<https://www.bigquestionsonline.com/>

October 6, 2016

Reflect 2c. What-if Reflections

What if Aaron Burr had missed Alexander Hamilton?, Thomas Fleming, CNN

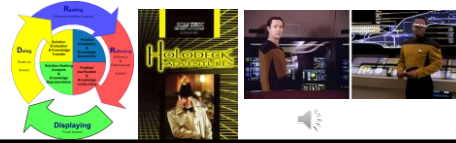
<http://www.cnn.com/2016/10/06/politics/alexander-hamilton-aaron-burr-dust-missed/index.html>

What if Aaron Burr had missed Alexander Hamilton?



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/>

Pinkcast 2.

Advice from Adam Grant: Look for "disagreeable givers"



January 8, 2017

Display 3c. Summary and Comparison Maps

#GeoawesomeMapOfTheDay

<https://twitter.com/geoawesome>

<https://www.instagram.com/p/2Bwv9JDAa3/>

<https://twitter.com/hashtag/GeoawesomeMapOfTheDay?src=hash>



4. Tactile/Kinesthetic Learners

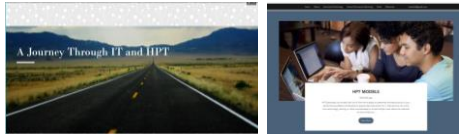
- Tactile/kinesthetic senses can be engaged in the learning process are role play, dramatization, cooperative games, simulations, creative movement and dance, multi-sensory activities, manipulatives and hands-on projects.



December 12, 2017
Do 4a. Online Website and Video
Recaps

R511 Student Final Projects

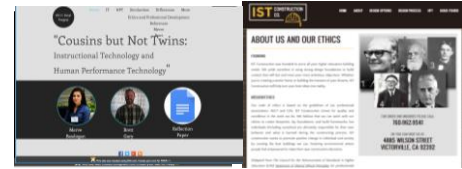
Matthew Willey: <https://sway.com/QGdiCv7p64DFBe8A?ref=Link>
 Rachael Zeiher Kean: <https://razeiher.wixsite.com/edtechcoms>



Do 4b. Student Website Development

R511 Final Projects, April 2016

IT and HPT Comparison (Website), Doug Hsu
<http://dougandindra.wix.com/r511finalproject>
 IST Construction, Co.
 Rob Elliot, Patrick Walsh, Erin Milanes, R511, December 2016
<http://reeliot.net/istconstruction/index.php>
 "Cousins but Not Twins: Instructional Technology and Human Performance Technology,"
 Merve Basdogan and Brett Gary, R511, December 2016
<http://educbasdogan.wixsite.com/511final>



March 11, 2018
Do 4c. PBL in Puerto Rico

<https://sites.google.com/isu.edu/pbl-in-puerto-rico/home>



Poll: Which Model or Framework do you Prefer?

<http://tec-variety.com/>



What motivates?

1. Tone/Climate: Psychological Safety, Comfort, Sense of Belonging
2. Encouragement: Feedback, Responsiveness, Praise, Supports
3. Curiosity: Surprise, Intrigue, Unknowns
4. Variety: Novelty, Fun, Fantasy
5. Autonomy: Choice, Control, Flexibility, Opportunities
6. Relevance: Meaningful, Authentic, Interesting
7. Interactivity: Collaborative, Team-Based, Community
8. Engagement: Effort, Involvement, Investment
9. Tension: Challenge, Dissonance, Controversy
10. Yielding Products: Goal Driven, Purposeful Vision, Ownership

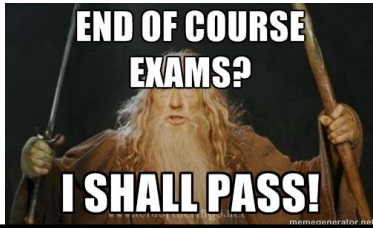


Poll: Who now wants one of these?
Starbucks



WHAT'S NEXT

Final Poll:
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...



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."
 "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

