Technology Today, Technology Tomorrow: Might Learning Evolutions lead to Learning Revolutions?

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

1

Opening Activity #1:

Type Answer in the Chat Window: What is your favorite type of learning technology today…?

2

Opening Activity #2:

Type Answer in the Chat Window: What is the technology that you think will most impact learning 10 years from now…

3

Polling Question #1:

Are we in the midst of a:
A. Learning Evolution or
B. Learning Revolution…
C. Neither

4

Talk Overview

1. Pandemic Pondering
2. Technology Yesterday
3. Education 20/20
4. Technology Today
   30 ways learning is changing…
5. Technology Trends of Tomorrow

5

July 30, 2020
Part 1: Pandemic Pondering

Disruptive Ecology:
The New Normal of Education in Post COVID-19

6

August 6, 2020

Millions of Americans Have Lost Jobs in the Pandemic—And Robots and AI Are Replacing Them Faster Than Ever

Alana Semuels, Time

https://time.com/5876604/machines-jobs-coronavirus/

Millions of Americans Have Lost Jobs in the Pandemic—And Robots and AI Are Replacing Them Faster Than Ever

Jarvis the robotic butler on duty at the Grand Hotel in Sunnyvale, Calif., on July 30

7

October 27, 2020

U.S. Lost Over 60 Million Jobs—Now Robots, Tech And Artificial Intelligence Will Take Millions More

Jack Kelly, Forbes

https://www.forbes.com/sites/jackkelly/2020/10/27/us-lost-over-60-million-jobs-now-robots-tech-and-artificial-intelligence-will-take-millions-more/?sh=1bb0f9f91e52

Video (1:20): http://curtbonk.com/automation.html

Video (1:20): http://curtbonk.com/automation2.html

U.S. Lost Over 60 Million Jobs—Now Robots, Tech And Artificial Intelligence Will Take Millions More

8

November 27, 2020

Robots on the rise as Americans experience record job losses amid pandemic

Lauran Arantani, The Guardian

https://www.theguardian.com/technology/2020/nov/27/robots-replacing-jobs-automation-unemployment-us

Robots on the rise as Americans experience record job losses amid pandemic

9

March 26, 2021

100 million more children fail basic reading skills because of COVID-19

UN News

https://news.un.org/en/story/2021/03/1088392

10

July 1, 2021

Online or in-person? Gen Z and millennials find digital life more memorable, study shows

Kate Mabus, USA Today

https://www.usatoday.com/story/news/nation/2021/07/01/general-z-or-millennial-survey-shows-digital-life-more-memorable/7778597002/

Online or in-person? Gen Z and millennials find digital life more memorable, study shows

What happens when digital learning surpasses in-person learning?

If there is one thing the pandemic is teaching us, it's that deep human connections are essential for student and instructor wellbeing and for impactful education. As we move into a hybrid future, technology should not (and cannot!) replace human relationships and communications–it should enhance, enable, and enrich them.

11

June 2, 2021

A Pandemic Silver Lining? More People Are Talking About Teaching

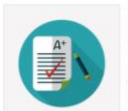
Beckie Supiano, The Chronicle of Higher Education

https://www.chronicle.com/article/a-pandemic-silver-lining-more-people-are-talking-about-teaching

A Pandemic Silver Lining? More People Are Talking About Teaching

View Online: https://www.ecampusnews.com/2021/05/17/students-give-passing-grades-to-pandemic-learning/

eCampus News
Today's Innovations in Education



Students give passing grades to pandemic learning

Laura Ascione
May 17, 2021

Survey results are promising and indicate that online learning was more successful than many in higher ed initially believed

12

July 12, 2021

Indiana suing virtual charter schools accused of defrauding the state for more than $150M

Arika Herron, Indianapolis Star

https://www.indystar.com/story/news/education/2021/07/12/indiana-virtual-charter-schools-state-suing-more-than-150-million/7938215002/

State of Indiana Suing Virtual Charter Schools for Fraud

Indiana suing virtual charter schools accused of defrauding the state for more than $150M

13

February 26, 2021

Ever have 'Zoom fatigue?' These are the causes and how to fix them, researchers say

Brett Molina, USA Today

https://www.usatoday.com/story/tech/2021/02/26/zoom-fatigue-causes-and-how-to-fix/6831569002/

14

June 11, 2021

Why I Will Miss Zoom Teaching

Samuel Abrams, The Chronicle of Higher Education

https://www.chronicle.com/article/why-i-will-miss-zoom-teaching

Why I Will Miss Zoom Teaching

Professors have talked a lot about the downsides of online synchronous teaching, but it's had some benefits, too.

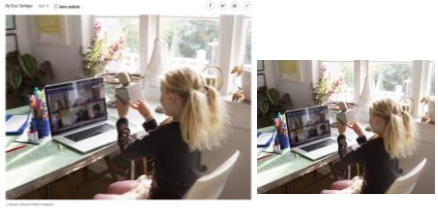
15

March 8, 2021

As Many Parents Fret Over Remote Learning, Some Find Their Kids Are Thriving

Eva Tedfaye, MindShift

https://www.kqed.org/mindshift/57480/as-many-parents-fret-over-remote-learning-some-find-their-kids-are-thriving



16

May 7, 2021

Why some black teens thrived with remote school

Shaylah Brown, USA Today

https://www.usatoday.com/story/news/education/2021/05/07/how-this-suburban-new-jersey-town-school-remote-learning/4973789001/

Watch Video: https://tinyurl.com/wwx4ydnn

Some Black students have thrived, educationally and emotionally, through remote learning

17

June 5, 2021

After a tough year, schools are axing virtual learning. Some families want to stay online.

Erin Richards, USA Today

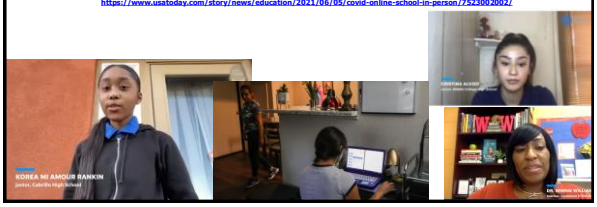
Video (1:27): NYC Mayor promised a return to normal for school system

http://curtbonk.com/usa4.html

Video (1:33) Students discuss what surprised them most hybrid learnings

http://curtbonk.com/usa3.html

https://www.usatoday.com/story/news/education/2021/06/05/covid-online-school-in-person/7523002002/



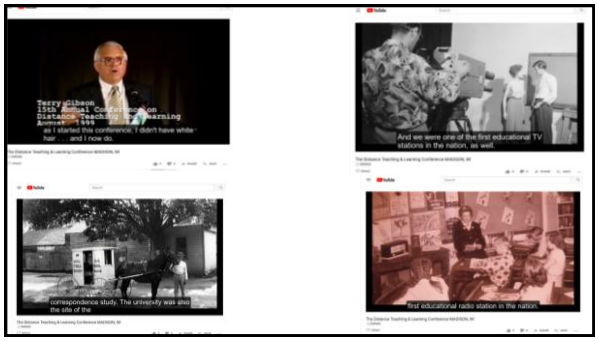
18

Part 2: Technology Yesterday

19

October 5, 2020
Remote learning isn't new:
Radio instruction in the 1937 polio epidemic
Katherine A. Foss, The Conversation
https://theconversation.com/amp/remote-learning-isnt-new-radio-instruction-in-the-1937-polio-epidemic-143797

20



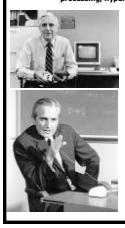
21

June 3, 2017
How PLATO changed the World…in 1960
Cait Etherington, ElearningInside News
https://www.youtube.com/watch?v=tTmWcGhlXqA
https://news.elearninginside.com/how-plato-changed-the-world-in-1960/

PLATO was the first generalized computer-assisted instruction system. Starting in 1960, it ran on the University of Illinois' ILLIAC I computer. By the late 1970s, it supported several thousand graphics terminals distributed worldwide, running on nearly a dozen different networked mainframe computers. Many modern concepts in multi-user computing were originally developed on PLATO, including forums, message boards, online testing, e-mail, chat rooms, picture languages, instant messaging, remote screen sharing, and multiplayer games.

22

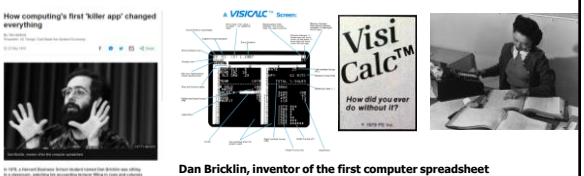
Intelligence Augmentation and Amplification
Douglas Engelbart's "The Mother of All Inventions" (1968)
Augmentation Research Center (ARC)
(The live demonstration featured the introduction of the computer mouse, video conferencing, teleconferencing, hypertext, word processing, hypermedia, object addressing and dynamic file linking, bootstrapping, and a collaborative real-time editor.")
http://www.amazon.com/Machines-Loving-Grace-Common-Between/dp/0062266683



Engelbart's prototype of a computer mouse, as designed by Bill English from Engelbart's sketches.

23

May 22, 2019
Who Remembers VisiCalc???
How computing's first 'killer app' changed everything
Tom Harford, BBC News
https://www.bbc.com/news/business-47802280



Dan Bricklin, inventor of the first computer spreadsheet

24

May 10, 2013

10 ed-tech tools of the 70s, 80s, and 90s

eSchool News, Meris Stansbury

http://www.eschoolnews.com/2013/05/10/10-ed-tech-tools-of-the-70s-80s-and-90s/print/

25

Bob Clasen, University of Wisconsin

https://www.youtube.com/watch?v=kCm1_MGaqec&feature=youtu.be

February 27, 1934-March 17, 2018

https://www.cressfuneralservice.com/obituary/249139/Robert-Clasen/

26

34 years ago…
Knowledge Navigator (1987)

Apple Computer

http://www.youtube.com/watch?v=hb4AzF6wEoc

27

August 6, 2021
The Web will be 30!

http://info.cern.ch/ (First website)

http://money.cnn.com/2016/08/06/technology/world-wide-web-25-years-old/index.html?iid=ehp-stack-dom

https://webfoundation.org/about/vision/history-of-the-web/

https://home.cern/science/computing/birth-web/short-history-web

28

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

Phase I, 1994: THE AGE OF PORTALS AND PAGES (NETSCAPE GOES PUBLIC).

Phase II, 2001: THE AGE OF OPENNESS (MIT OCW & WIKIPEDIA BORN).

Phase III, 2008: THE AGE OF MOOCS (FIRST MOOC OFFERED).

Phase IV, 2015 THE AGE OF PERSONALIZATION.

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

29

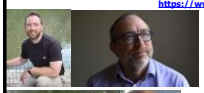
January 15, 2021
Wikipedia is 20!

Simon Garfield, Esquire: What We Know And Can Agree On: Wikipedia At 20

https://en.wikipedia.org/wiki/Wikipedia:20th_anniversary

https://www.esquire.com/uk/culture/a34412278/wikipedia-at-20/

https://wikipedia20.pubpub.org/



30

April 4, 2021
MIT OpenCourseWare is 20!

https://www.youtube.com/watch?v=0aAEamhJHUI
https://ocw.mit.edu/about/milestones/
https://news.mit.edu/2021/mit-courseware-educational-resource-to-millions-0406

31

Fast Forward to 2021…

"Anyone can now learn anything from anyone at any time."

32

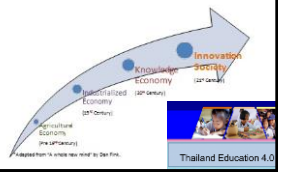
Education 3.0

"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

33

Now What is Education 4.0?

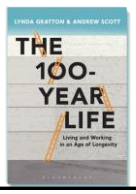
"Innovation-producing education. Learn more in: Development of Individual Agency within a Collaborative, Creative Learning Community"
http://www.igi-global.com/dictionary/education-40/41755
https://thinc.in.th/engadmission/education4.html **(Chula Engineering)**



34

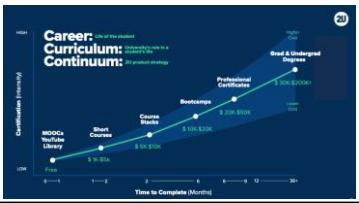
July 24, 2018
The 100-Year Life: Living and Working in an Age of Longevity
Lynda Gratton and Andrew Scott

http://www.100yearlife.com/
https://www.amazon.com/100-Year-Life-Living-Working-Longevity/dp/1543624634



35

March 13, 2019
The Career Curriculum Continuum
Andrew Hermalyn, Inside Higher Ed
https://www.insidehighered.com/digital-learning/views/2019/03/13/how-universities-can-stay-center-learners-lives-opinion



36

February 25, 2020

The 60 Year Curriculum:

Developing New Educational Models to Serve the Agile Labor Market

Chris Dede, Harvard University, The Evolllution

https://evolllution.com/revenue-streams/professional_development/the-60-year-curriculum-developing-new-educational-models-to-serve-the-agile-labor-market/

219: The 60-Year Curriculum with Rovy Branon

https://tolbolinc.com/podcast/219

37

July 11, 2017

The Rise of the Phigital Learner

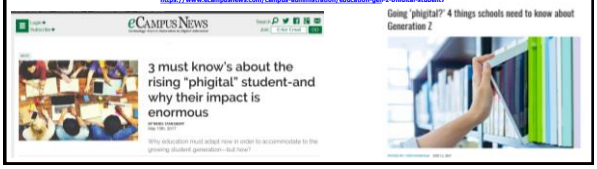
Going 'phigital?' 4 things schools need to know about Generation Z, Todd Kominiak, TrustEd

http://trustedk12.com/phigital-digital-learning/

May 15, 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/



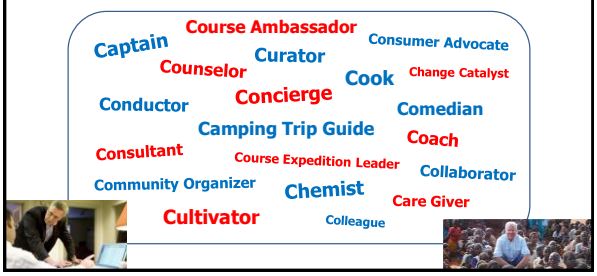
38

Part 3. Education 20/20

39

40

20 New Roles of the Instructor

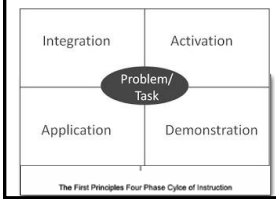


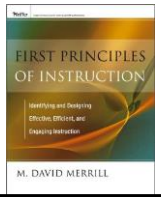
41

42

Merrill's First Principles of Teaching/Instruction

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

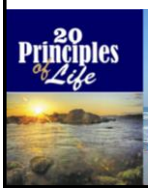




43

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

http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
http://www.applicadthai.com/articles/education-4-0/



44

1. The Principle of Flexibility

http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
(e.g., multiple due dates, grace period, flexible agenda, etc.)

45

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 time to teach the class, etc.)

46

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 as a group/team or individually submit, etc.)

47

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.)

48

8. The Principle of Support and Feedback

http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html
(e.g., offer extensive feedback, assign critical friends for feedback, offer summary feedback for common questions, use job aids and scaffolds, etc.)

49

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.)

50

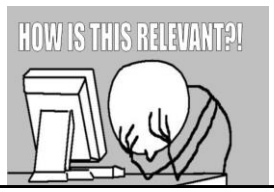
11. The Principle of Sharing

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

51

14. The Principle of Relevance and Meaningfulness

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



52

16. The Principle of Expanded Resources

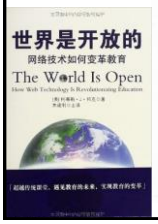
http://travelinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html

53

The World of Open Education

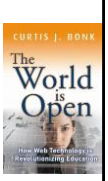
54

The World is Open:
How Web Technology Is Revolutioning 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



55

56

The World is very open!
(South University of Science and Technology of China, Wednesday June 10, 2015)

57

17. The Principle of Human Connectedness

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

58

20. ??? (what is missing)

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

59

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
Support and Feedback
Choice and Options
Nontraditional Learning
Convenience
Spontaneity
Passion and Inspiration
Collegiality
Organization
Relevance and Meaningfulness
Sharing
Trial and Error (i.e., it is ok to fail)
Cheerfulness and Optimism
Expanded Resources
High Expectations
Purpose and Vision
Human Connectedness
#20 ???
Empowerment and Autonomy
Cognitive Apprenticeship

60

Clearly…
Learning is Changing!

61

Part 4. Thirty Ways Learning is Changing…
(i.e., it's more informal, video-based, ubiquitous, collaborative, self-directed, global, mobile, open, massive, etc.)

62

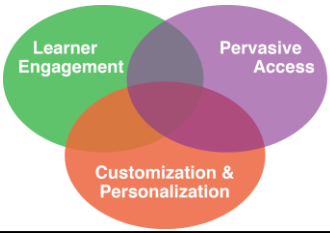
November 11, 2020
Educational technology is coming of age during the pandemic: Nowhere more so than in India
https://www.economist.com/international/2020/11/11/educational-technology-is-coming-of-age-during-the-pandemic

In China's Silicon Valley, Edtech Starts at the 'MOOC Times Building'

Educational technology is coming of age during the pandemic

63

30+ Ways Learning is Changing: The Mega Trends



64

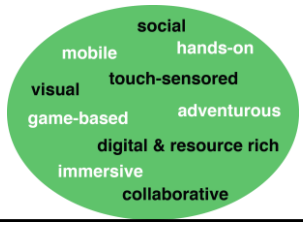
Polling Question #1:
Are we in the midst of a:
A. Learning Evolution or
B. Learning Revolution…
C. Neither

65

Polling Question #2:
Which is the most important trend?
a. Mega Trend #1. Learner Engagement
b. Mega Trend #2. Pervasive Access
c. Mega Trend #3. Customization

66

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



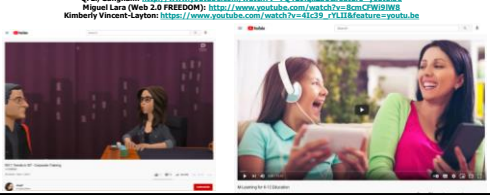
67

March 2021
Learning is More Mobile
Best small phone 2021: The top tiny, compact smartphone choices
James Rogerson, TechRadar
https://www.techradar.com/best/best-small-phone

The Octopus watch from Joy, an icon-based watch for kids to have good habits is on display during CES.

68

March 1, 2021
Learning is Hands-on
Student Designed Videos
M-Learning for K-12 Education
Terri and Terri https://www.youtube.com/watch?app=desktop&v=4gv_mc7D6vo
Amy Papst: https://www.youtube.com/watch?v=jJcaqGc6spE&feature=youtu.be
Qi Li, Gangnam: http://www.youtube.com/watch?v=7Q429lgxZaU&feature=youtu.be
Miguel Lara (Web 2.0 FREEDOM): http://www.youtube.com/watch?v=8cmCFWi9IW8
Kimberly Vincent-Layton: https://www.youtube.com/watch?v=4Ic39_rYLII&feature=youtu.be



69

July 2, 2021
Learning is Hands-on
Teaching coding and design can lead to tech literacy
Jean Sharp, eCampus News
https://www.technewsw.com/2021/07/02/teaching-coding-and-design-can-lead-to-tech-literacy/?ps=99999999-9013000000d0af-0033000000a1f7f8&m=mc=202212

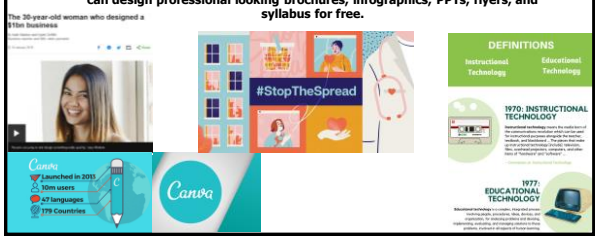
Teaching coding and design can lead to tech literacy

Jean Sharp, CAO, Apex Learning
July 2, 2021
Courses that help students build technology skills increase students' tech literacy and their ability to contribute to the workforce

Encouraging technology creators means engaging students in project-based technology courses that introduce them to coding, design, gaming, and animation. And as students complete projects such as developing an app, creating a 3D video game, or designing a collection, they gain relevant, hands-on experience using industry-standard tools professionals use. Students apply creativity, problem-solving, and critical thinking skills–competencies that are important in preparing students for the future and are applicable to any career, whether it's in technology or not.

70

June 27, 2020
Learning is Hands-on
Design Products (students created infographics, brochures, timelines)
Canva is an online design program that does not require much design skills. You can design professional looking brochures, infographics, PPTs, flyers, and syllabus for free.

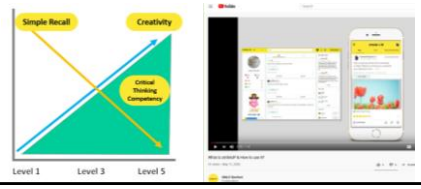


71

Learning is Hands-on
Video, Podcast Show, Documentary, Website, Animation, Song, etc.
https://app.animaker.com/animo/2h5b0Hz2gxUR3Sx4/?shareid=view%7C2h5b0Hz2gxUR3Sx4

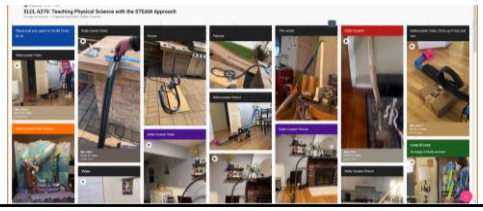
72

May 11, 2020
Learning is More Game-based
What is smileUP & How to use it?
SMILE, Paul Kim at Stanford
https://www.youtube.com/watch?v=pblU8sSALWo



73

March 21, 2021
Learning is More Digitally Rich
ELCL 6270: Teaching Physical Science with the STEAM Approach
Heejung An: ANH2@wpunj.edu, William Paterson University
https://padlet.com/anh21/4haa7swcscf1r77s

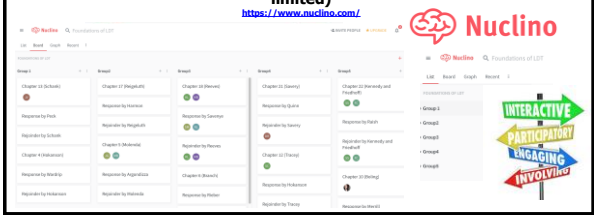


74

April 11, 2021
Learning is More Collaborative
Brainstorming in Jamboard or Miro
https://jamboard.google.com/

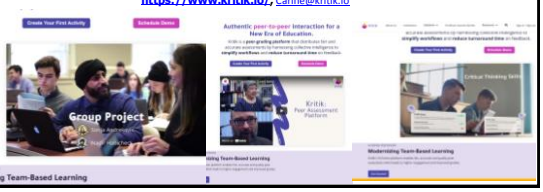
75

Fall 2019, R511
Learning is More Collaborative
Team Article Debates
Nuclino (like a wiki…may delete by mistake, trial version, limited)
https://www.nuclino.com/



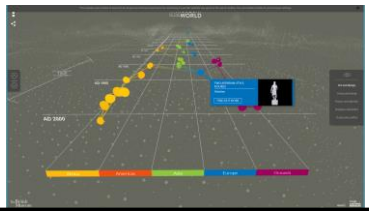
76

July 23, 2021
Learning is More Collaborative
Kritik is a peer-grading platform
Authentic peer-to-peer interaction for a New Era of Education.
Carine Marette
https://www.linkedin.com/in/carinemarette/
https://www.kritik.io/, Carine@kritik.io



77

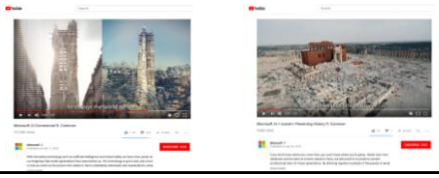
October 20, 2020
Learning is More Visual
The British Museum
https://britishmuseum.withgoogle.com/



78

April 22, 2018
Learning is More Visual
Microsoft AI Commercial ft. Common

Video 1:00: Microsoft AI Commercial ft: https://www.youtube.com/watch?v=9tucY73hhs4 / (Feb 11, 2018)
Video 1:48: Microsoft AI: Amplifying Human Ingenuity: https://www.youtube.com/watch?v=NDmuTZ5NPXo
Video 1:00: Microsoft AI: Empowering Innovators ft. Common: https://www.youtube.com/watch?v=ZSOWdqfAYfw (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)

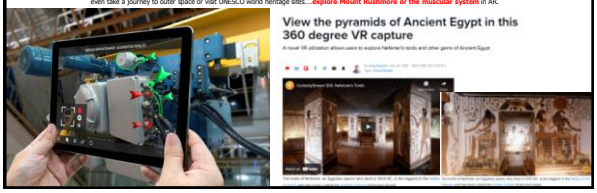


79

November 23, 2020
Learning is More Immersive
Can AR be the antidote to virtual classroom shortcomings?
Parker McDonnough, eSchool News

https://www.eschoolnews.com/2020/11/23/can-ar-be-the-antidote-to-virtual-classroom-shortcomings/2/
https://www.zdnet.com/article/view-pyramids-of-ancient-egypt-via-this-360-degree-vr-capture/

AR brings learning to life and allows students to experience education during distance learning. **With AR, students can walk through Stonehenge, tour the Egyptian pyramids, go on a virtual field trip of the Louvre Museum, or explore the cavities of the human heart – all from the comfort of their homes.** Students can even take a journey to outer space or visit UNESCO world heritage sites…**explore Mount Rushmore or the muscular system** in AR.



80

July 17, 2017
Learning is More Immersive
Learning Chemistry in Virtual Reality,
Sarah Hardman, New Learning Times

https://newlearningtimes.com/cms/article/4519/learning-chemistry-in-virtual-reality
1:38 video: https://vialogues.com/vialogues/play/38337/
AR: http://curtbonk.com/chemistry-vr.html
01.-41: http://curtbonk.com/chemistry-vr-1.html
.41-1:16: http://curtbonk.com/chemistry-vr-2.html
1:16-1:56: http://curtbonk.com/chemistry-vr-3.html

81

May 1, 2018
Learning is More Immersive
3 ways districts can use AR and AI
Justin Anglio, eSchool News

https://www.eschoolnews.com/2018/05/01/3-amazing-ways-our-district-is-using-ar-and-vr/

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.

82

June 24, 2021
Learning is More Immersive
This Week In XR: VR Ad Excitement, Tencent Invests $50M In Ultraleap, The Linkedin Of VR
Charlie Fink, Forbes
https://apple.news/A0dVCTuPtQsu0VdrQccHb6A

A New World Awaits – Varjo's Special Event on June 24, 2021
Metaverse explained (22:50): https://www.youtube.com/watch?v=MHDFNr0MNek
http://curtbonk.com/vr3.html
Mixed Reality Hand Tracking with Varjo XR-1 and Ultraleap (solar system/Earth):
Video (1:20): http://curtbonk.com/vr1.html

83

April 15, 2021
Learning is More Visual
Google Earth's New 3D Time-Lapse Feature Shows How Humans Are Affecting the Planet
Sam Rutherford, Gizmodo

https://gizmodo.com/google-earths-new-3d-time-lapse-feature-shows-how-human-1846685339

84

Poll #3: Any light bulbs going off in you head so far?

a. Yes definitely…many of them…pop…pop…pop!
b. Yes, several times.
c. Yes maybe!
d. Not yet (but hopefully soon…)
e. Nope. Darn it my brain is not working today.
f. There's no hope with this idiot presenting.

85

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

86

April 21, 2021

Learning is More Open

Why Open Access Is a Game Changer
Britt Glaunsinger, Inside Higher Ed
https://www.insidehighered.com/views/2021/04/21/significant-benefits-sharing-scientific-expertise-through-open-access-opinion

87

March 19, 2018

Learning is More Free and Open

Open Textbook Network
Center for Open Education, University of Minnesota
http://research.cehd.umn.edu/otn/

88

Learning is More Free and Open

Introducing the TEC-VARIETY Model

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

89

June 23, 2020

Learning is More Synchronous

Turns Out You Can Build Community in a Zoom Classroom
Rachel Toor, The Chronicle of Higher Education
https://www.chronicle.com/article/Turns-Out-You-Can-Build/249038

90

November 10, 2020

Learning is More Synchronous

'Telepresence' robots are making virtual school feel a little more like real school

Jennifer Davis, The Washington Post

https://www.economist.com/international/2020/11/11/educational-technology-is-coming-of-age-during-the-pandemic

91

June 18, 2021

Learning is More Synchronous

I am writing to send a screenshot of the synchronous hybrid English class for rural Chinese students. I also have a short video clip (though not in high quality), if you are interested.

92

May 26, 2021

Learning is More Global

Chatterbox: Master a Language, Change a Life

The overall winner in the competition was Chatterbox, an online language school powered by refugees

https://www.chatterbox.io/

Mursal Hedayat, London

https://www.youtube.com/watch?v=3K3VexuIpe0

93

July 7, 2020

Learning is More Immediate…

Science in the News

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

https://www.usatoday.com/story/tech/science/2018/01/29/holy-grail-dinosaur-fossils-discovered-egyptian-desert/1075419001/

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

https://edition.cnn.com/2018/11/27/europe/siberian-unicorn-humans-scli-intl/index.html

https://www.usatoday.com/story/news/nation/2020/12/10/tyrannosaurus-relative-ancient-dinosaur-unearthed-south-dakota/3889871002/

Video: 53 seconds

94

June 18, 2021

Weird 'living fossil' fish lives 100 years, pregnant for 5

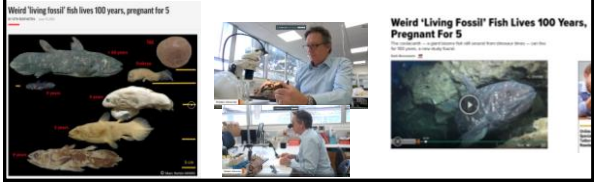
Seth Borenstein, AP News

Learning is More Immediate…

Science in the News

https://apnews.com/article/fish-science-environment-and-nature-0364a1007aea49574a2b68aee6009aa6

Video (55 seconds): https://curtbonk.com/fish.html



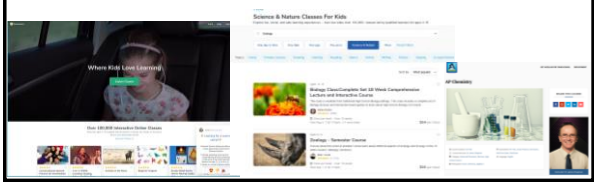
95

June 17, 2021

Outschool (low cost online)

Learning is More Online…

https://outschool.com/



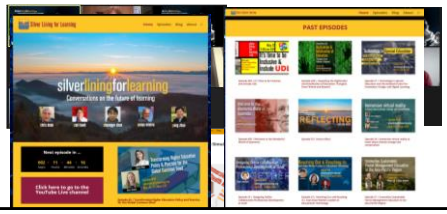
96

April 11, 2020
Learning is More Video-based…
(e.g., Flipgrid)

Ed Tech with Adam: https://www.youtube.com/watch?v=hysv0PwqsFs
https://techcrunch.com/2018/09/18/microsoft-acquires-social-learning-platform-flipgrid/

97

Spring 2021
Learning is More Video-based…
Silver Lining for Learning
https://silverliningforlearning.org/
https://www.youtube.com/channel/UC9XEsh89qrIpmVVpQt-_aA/live

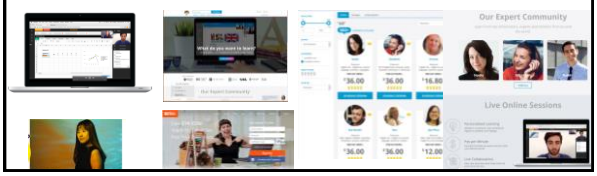


98

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 can connect on any device allows tons 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/



99

How Learning is Changing:
Mega Trend #3. Customization

100

Poll #4: Have you ever taught a blended (face-to-face and online) course?

a. Yes many.
b. Yes, just a couple.
c. No, but I taught one or more technology enhanced ones.
d. No but I am willing to try.
e. No and I like it that way.

101

Poll #5: Have you ever taught a fully online course?

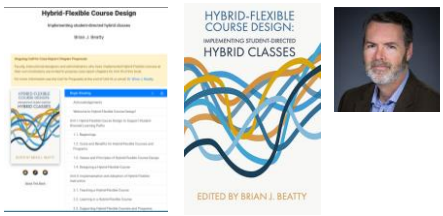
a. Yes, many.
b. Yes, just a couple.
c. No, but I taught one or more blended ones.
a. No but I am willing to try.
b. No and I like it that way.

102

July 12, 2021
Learning is More Blended
How to Prepare for the Next Phase of Hybrid Teaching
Jenae Cohn, The Chronicle of Higher Education
https://www.chronicle.com/article/how-to-prepare-for-the-next-phase-of-hybrid-teaching

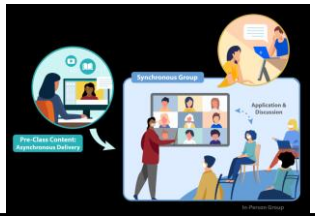
103

June 17, 2021
Free Book:
Hybrid-Flexible Course Design
https://edtechbooks.org/hyflex



104

Fall 2021
Hybrid Modality: HyFlex Teaching
https://instructionalcontinuity.georgetown.edu/pedagogies-and-strategies/hybrid-hyflex-teaching/
HyFlex (a term coined by Brian Beatty) stands for a combination of "hybrid," meaning alternating between face-to-face meetings and remote interactions, and "flexible," meaning students move between these participation options.



105

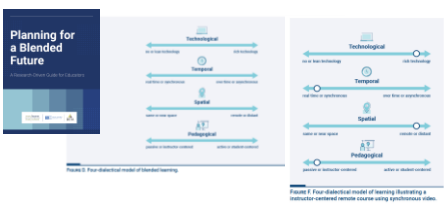
Fall 2021
Hybrid Modality: HyFlex Teaching
https://instructionalcontinuity.georgetown.edu/pedagogies-and-strategies/hybrid-hyflex-teaching/
In a HyFlex course, courses are delivered both in person and online at the same time by the same faculty member. For any given class meeting, some students might participate in person, while others might participate at the same time online, made possible by a combination of cameras, microphones, displays, and other technology in the classroom.

106

June 17, 2021
How can higher ed move blended learning forward?
Planning for a Blended Future: A Research-Driven Guide for Educators
https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future
Jessca Rowland Williams, eCampus News
https://www.ecampusnews.com/2021/06/17/how-can-higher-ed-move-blended-learning-forward/

107

June 17, 2021
Planning for a Blended Future:
A Research-Driven Guide for Educators
https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future/



108

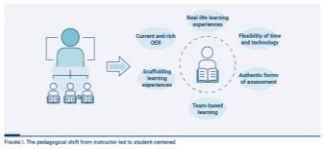
June 17, 2021

Planning for a Blended Future:
A Research-Driven Guide for Educators
https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future/

109

June 17, 2021

Planning for a Blended Future:
A Research-Driven Guide for Educators
https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future/



110

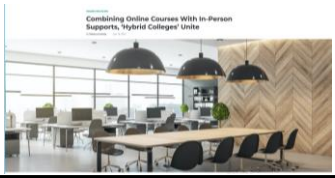
April 25, 2020
(SuperTravelinEdMan)

STARLINK programs on Online and Blended Learning and the Web 2.0
October 2008-January 2010
https://www.youtube.com/playlist?list=PLHcReRoW2IxOrKfYXJyv3y40ZVccDcwEv

111

June 14, 2021
Learning is More Blended

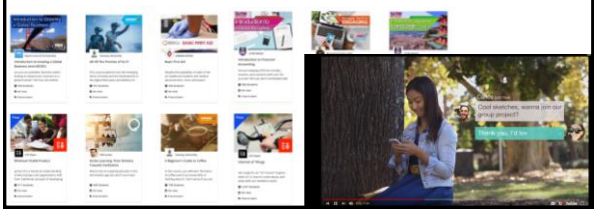
Combining Online Courses With In-Person Supports, 'Hybrid Colleges' Unite
Rebecca Koenig, Ed Surge
https://www.edsurge.com/news/2021-06-14-combining-online-courses-with-in-person-supports-hybrid-colleges-unite



112

Learning is More Self-Directed

The LMS Market is Quickly Losing Ground
Carol Leaman, CLO
https://www.openlearning.com/
https://www.openlearning.com/



113

Learning is More Self-Directed

Language Lessons Online
BBC Learning English, Duolingo, etc.
http://www.bbc.co.uk/learningenglish

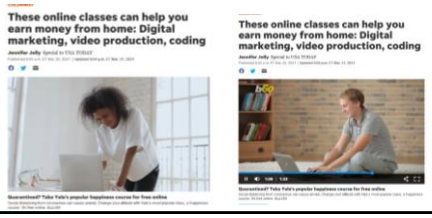
114

March 20, 2021

These online classes can help you earn money from home: Digital marketing, video production, coding

Jennifer Jolly, USA Today

https://www.usatoday.com/story/tech/columnist/2021/02/20/online-classes-courses-digital-marketing-coding-video-project-mgt/4763042001/



115

February 1, 2021

Yale is offering its highly popular 'happiness' course to high school students for free

By Marika Gerken, CNN

https://www.cnn.com/2021/02/01/us/yale-good-life-class-trnd-wellness/index.html

(3.4 million enrolled, 28,500 reviews)

116

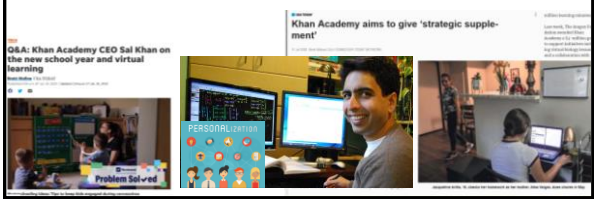
July 31, 2020

Learning is More Personal

Khan Academy aims to give 'strategic supplement'

Brett Molina, USA Today

https://www.usatoday.com/story/tech/2020/07/30/khan-academy-ceo-sal-khan-prepping-fall-virtual-learning/5525480002/



117

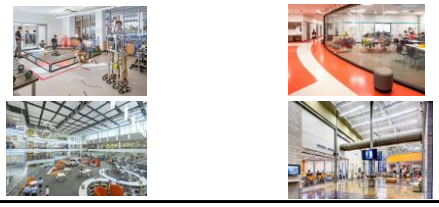
March 2, 2018

Learning is More Modifiable

The Architecture of Ideal Learning Environments

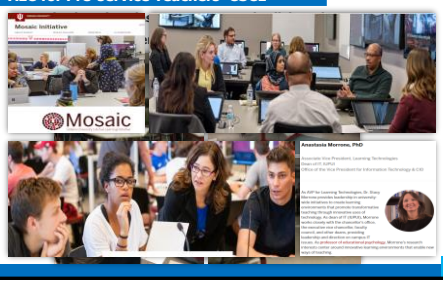
Emelina Minero, Edutopia

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



118

Mosaic Active Learning Classrooms
ALC for Pre-service Teachers' CSCL



119

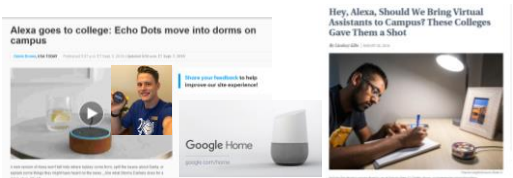
August 2, 2018

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



120

May/June 2020

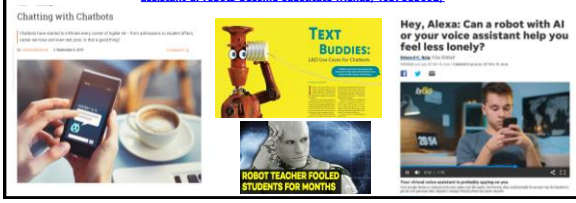
Learning is More On Demand

Chatting with Chatbots and Text Buddies

Lindsey McKenzie, Inside Higher Ed

https://www.insidehighered.com/news/2019/09/06/expansion-chatbots-higher-ed

https://www.usatoday.com/story/tech/2019/11/08/alexa-google-assistant-ai-robots-become-substitute-friends/4057885002/



121

June 16, 2021

Learning is More Personalized

AI voice actors sound more human than ever—and they're ready to hire

Karen Hao, MIT Technology Review

https://www.technologyreview.com/2021/07/09/1028140/ai-voice-actors-sound-human/?utm_source=pocket-newtab

Voice (4:43): https://www.youtube.com/watch?v=YajBaSPO1Hk

Video downloaded: http://curtbonk.com/aivoice2.html

Audio (4 examples): http://curtbonk.com/aivoice.html

122

May 9, 2018

Conversation with Technology

Google Duplex Demo from Google IO 2018

Video (4:11): https://www.youtube.com/watch?v=bd1mEm2Fy08

Video (2:05): http://curtbonk.com/google40-245.html

Entire video (4:11) http://curtbonk.com/google2018.html

Donald Clark Plan B

http://donaldclarkplanb.blogspot.ca/2018/05/google-just-announced-ai-bot-that-could.html?m=1

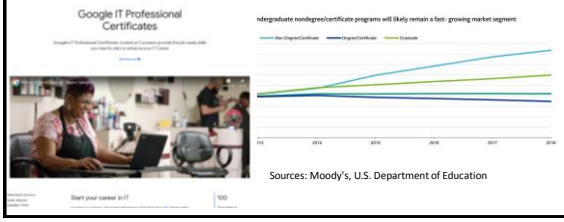
123

August 27, 2020

Alternative Credentials on the Rise

Paul Fain, Inside Higher Ed

https://www.insidehighered.com/news/2020/08/27/interest-spikes-short-term-online-credentials-will-it-be-sustained



124

July 22, 2021

Shifting Paradigms: Understanding Institutional Perspectives on Microcredentialing

https://moderncampus.com/pdfs/shifting-paradigms-understanding-institutional-perspectives-on-microcredentialing.pdf

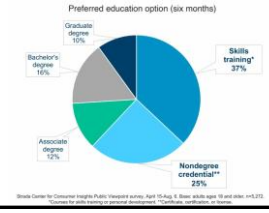
125

August 27, 2020

Alternative Credentials on the Rise

Paul Fain, Inside Higher Ed

https://www.insidehighered.com/news/2020/08/27/interest-spikes-short-term-online-credentials-will-it-be-sustained



126

April 30, 2020

New Udemy Report Shows Surge in Global Online Education in Response to COVID-19

There has been an immense surge in enrollments in courses related to Telecommuting (21,598% increase) and Virtual Teams (1,523%), as well as Decision Making (277%), Self Discipline (237%), and Stress Management (235%).

Highest Enrollment Surges by Country Since Shelter in Place

Udemy

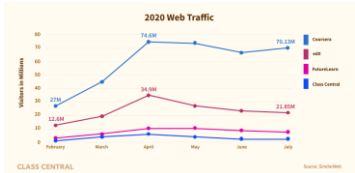
127

127

MOOCs Stats

August 16, 2020

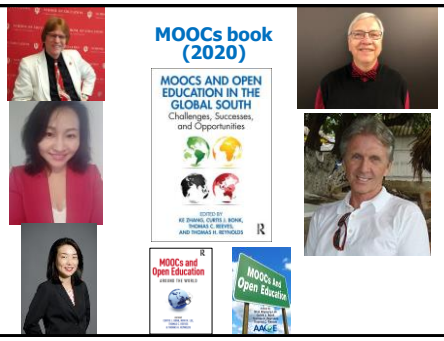
By the Numbers: MOOCs During the Pandemic
Dhawal Shah, Class Central
https://www.classcentral.com/report/mooc-stats-pandemic/



128

128

MOOCs book (2020)



129

November 9, 2019

Greetings from Nepal,
Baman Kumar Ghimire
Teacher, Motherland Secondary School, Pokhara

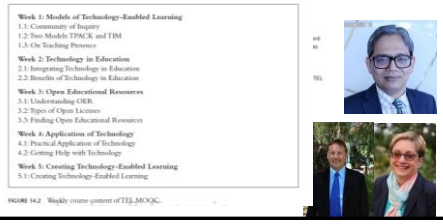
I held a workshop in a school about 70 students of age 13-15. I was excited to learn that in less than 8 months 78 students of age 10-15 from that school completed at least a MOOC.

Likewise, lately reported that, a school whose head teacher and a few students I mentored in 2017 has about 350 students completing at least a MOOC. Acknowledging the benefits of MOOCing and the growing interest of the students and guardians, the school administration has made at least a MOOC compulsory for the students age 11-14 in its school.

130

November 26, 2019

Chapter 14. Capacity Building of Teachers: A Case Study of the Technology-Enabled Learning (TEL) Massive Open Online Courses
Sanjaya Mishra, Martha Cleveland-Innes, and Nathaniel Ostashewski



131

November 26, 2019

Chapter 16: Courses for a Cause:
MOOC Contributions to a "Better Place for All"
(Marianne Krasny et al., 2020)

132

November 26, 2019

Chapter 25. Responsive Innovations in MOOCs for Development: A Case Study of AgMOOCs in India 300

Balaji Venkataraman and Tadinada V. Prabhakar

(agMOOCs in India)

http://www.agmoocs.in/

133

March 22, 2021

Famous Stanford coding course seeks to repeat success of novel model of online learning

(10,000 students, 120 countries, 900 volunteer teachers)

https://news.stanford.edu/2021/03/22/famous-stanford-coding-course-free-online/

134

30+ Ways Learning is Changing:
Recapping the Three Mega Trends:
Engagement, Access, and Customization

135

June 8, 2019

The second half of humanity is joining the internet: They will change it, and it will change them

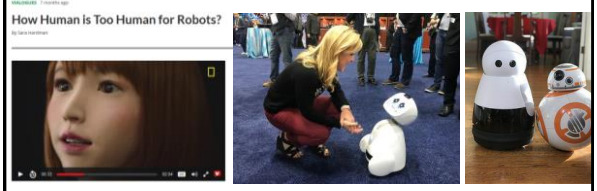
The Economist

https://www.economist.com/leaders/2019/06/08/the-second-half-of-humanity-is-joining-the-internet

136

Part 5. Tech Trends of Tomorrow

http://www.huffingtonpost.ca/dr-marie-bountrogianni/prepare-for-future-learni_b_16407756.html



137

138

1. Robot Collaborators/Partners

http://www.thelivingmoon.com/43ancients/02files/Library_Alexandria.html

139

August 1, 2018

2. Independent Studies Via MOOCs

MOOC: AI A-Z: Learning How to Build an AI Online Course and Machine Learning

Mengyuan Zhao

https://www.udemy.com/artificial-intelligence-az/
https://www.coursera.org/learn/machine-learning

140

September 22, 2017

3. Binge Learning Experiences

What Online Education Can Learn from Netflix

Henry Kronk, E-learning Inside News

https://theumlaut.com/binge-learning-is-online-education-s-killer-app-84da18f8ae76

141

4. Rise of Super E-Mentors and AI Coaches

142

September 26, 2018

5. Interactive Agents and Tutors

Pushing the Boundaries of Learning With AI

Lindsay McKenzie, Inside Higher Ed

https://www.insidehighered.com/digital-learning/article/2018/09/26/academics-push-expand-use-ai-higher-ed-teaching-and-learning
https://www.ibm.com/blogs/research/2018/08/mandarin-language-ai/
https://www.youtube.com/watch?time_continue=4&v=7Eu5Tu1iR2A
1:17: http://curtbonk.com/mandarin.html

143

January 30, 2017

6. Professor Einstein PDA's

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

Professor Einstein, an educational Wi-Fi connected robot is on display at the Hanson Robot display during the opening day of Consumer Electronics Show 2017. (Photo: Robert Hanashiro, USA TODAY)

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

144

June 15, 2019

7. University of the Third Age, London, UK

https://www.u3a.org.uk/

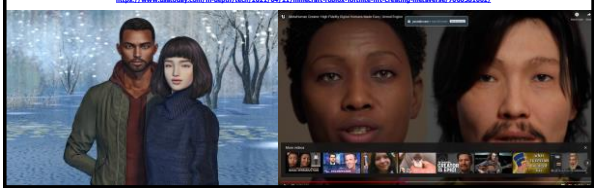
U3A (The University of the Third Age) is a UK-wide movement which brings together people in their 'third age' to develop their interests and continue their learning in a friendly and informal environment.
If you're wondering what we mean by the third age - it is a time after you have finished working full-time or raising your family and have time to pursue your interests or just try something new.

145

April 23, 2021

8. Duplicate Selves in Virtual Worlds

From Minecraft to Zoom calls, we've all spent much of the pandemic on our screens. But are we ready for the metaverse?
Mike Snider, USA Today
http://curtbonk.com/metaverse.html
MetaHuman Creator: High-Fidelity Digital Humans Made Easy | Unreal Engine
https://www.youtube.com/watch?v=S3F1vZYGHBc
https://www.usatoday.com/in-depth/tech/2021/04/21/minecraft-roblox-fortnite-nft-creating-metaverse/7000381002/



146

9. World Knowledge Refreshment Stations

http://www.thelivingmoon.com/43ancients/02files/Library_Alexandria.html

147

January 25, 2021

10. AI Generated Teachers

Tom Bartlett, The Chronicle of Higher Education
https://www.futureme.org/

148

June 10, 2020

Learning in 2050

Edward J. Mahoney and Joshua Kim, Inside Higher Ed
https://www.insidehighered.com/digital-learning/blogs/learning-innovation/learning-2050

Per Kim and Mahoney: "Where might we be in 2050? As we said, a lot can happen. We might see changes in how we use technology, and how students use technology engage in both curricular and co-curricular activities."

149

Poll 6: How many ideas did you get from this talk?

1. 0 if I am lucky.
2. Just 1.
3. 2, yes, 2…just 2!
4. Do I hear 3? 3!!!!
5. 4-5.
6. 5-10.
7. More than 10.

150

Poll #7: Is this an Evolution or Revolution?

151

Chat Window Sharing:
Three Words from this Session…?
e.g., "I am happy!" and…
"minions are happy!"

152

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

153

Things are heating up!

154

The Learning Revolution is coming within reach!

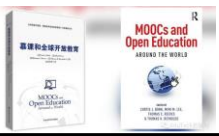
155

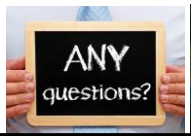
Remember…
"I cannot do this alone."
"I cannot do this alone."
"I cannot do this alone."
"I cannot do this alone."

156

Any Questions or Comments?

Slides at: TrainingShare.com
Papers: PublicationShare.com
Free book: http://tec-variety.com/
Email: cjbonk@indiana.edu





157