

Education 20/20 Meets Education 4.0: Visions of Our Changing Learning World!

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<http://curtbonk.com/>



Talk Overview

1. Jobs are changing
2. Education 20/20 and the Role of the Instructor
3. First and Last Principles of Instruction
4. Megatrends of Learning: Engagement, Access, and Customization (30 ways that learning is changing...)
5. Trends for tomorrow



1

2

(Circa Confucius 551–479 BCE)



Needed: New Models of Motivation and Engagement



Bihar cheating scandal: What parents in India will do for good grades



3

4

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/801508002/>



October 5, 2020

Remote learning isn't new:
Radio instruction in the 1937 polio epidemic

Katherine A. Foss, The Conversation

<https://theconversation.com/remote-learning-isnt-new-radio-instruction-in-the-1937-polio-epidemic-145297>



Remote learning isn't new: Radio instruction in the 1937 polio epidemic

5

6

February 2, 2016

1960's PLATO Computer System – Computer Aided Learning CAI CBT CDC Control Data Educational

<https://www.youtube.com/watch?v=ttmWcGhIXgA>


7

June 3, 2017

How PLATO changed the World...in 1960 Cait Etherington, ElearningInside News

<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' SILLAC 1 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.

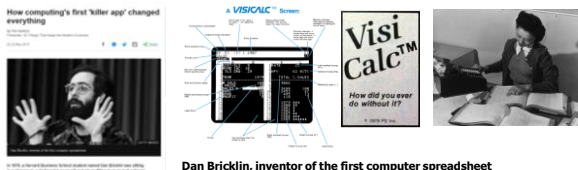


8

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

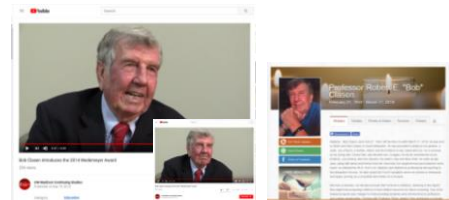
9

September 19, 2014

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/>


10

September 26, 2018

Remember Education 2.0?

The rise and fall of the company behind 'Reader Rabbit' and all your favorite educational games

Abigail Cain, The Outline

<https://theoutline.com/post/524/remember-education-20-the-rise-and-fall-of-the-company-behind-reader-rabbit-and-all-your-favorite-educational-games>

Rocky's Boots: <https://www.youtube.com/watch?v=a-NJH58b1Ik>

Project YES (Curt Bonk): <https://youtu.be/bZD5mQH4Ups>



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Fast Forward 30+ Years...

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



12



July 29, 2016 Reimagine Your Learning Space: Starbucks Your Classroom!

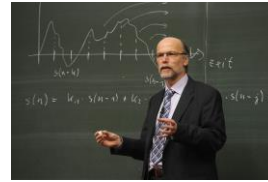
Oskar Cymerman, Teaching Channel
<https://www.teachingchannel.org/blog/2016/07/29/starbucks-your-classroom/>



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.

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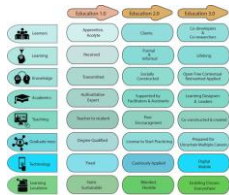
Education 3.0...Education 20/20



"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)

14

September 18, 2017 Education 1.0 to 3.0 Gilly Salmon, University of Liverpool, UK <http://www.gillysalmon.com/learningfutures.html>



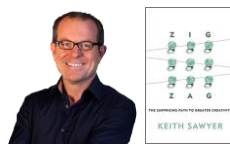
15

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)

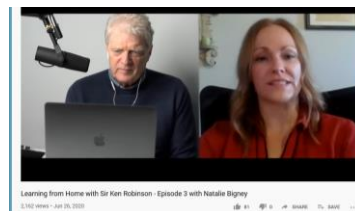


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June 26, 2020 Learning from Home with Sir Ken Robinson - Episode 3 with Natalie Bigney <https://www.youtube.com/watch?v=1hpikfz13p0&feature=youtu.be>



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March 13, 2019

The Career Curriculum Continuum

Andrew Hermelyn, Inside Higher Ed
<https://www.insidehighered.com/digital-learning/article/2019/03/13/how-universities-can-stay-center-learning-lives-option>

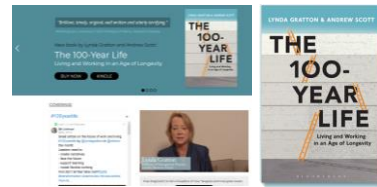
In fact, every year since 1840, there has been a three-month increase in life expectancy. Today the average life expectancy in the United States is 79, and millennials have a 50 percent chance of living to 100 years. In past centuries, people would study, get a job and retire at age 65. But times have changed, and it's now estimated that the average person will have 12 to 14 careers in a lifetime.

19

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>



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March 13, 2019

The Career Curriculum Continuum

Andrew Hermelyn, Inside Higher Ed

<https://www.insidehighered.com/digital-learning/article/2019/03/13/how-universities-can-stay-center-learning-lives-option>



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February 25, 2020

The 60 Year Curriculum: Developing New Educational Models to Serve the Agile Labor Market

Chris Dede, Harvard University, The Evollution

<https://evolution.com/news/dede/professional-development-the-60-year-curriculum-developing-new-educational-models-to-serve-the-agile-labor-market/>

219: The 60-Year Curriculum with Romy Branon
<https://hbr.org/podcast/219>



22

August 21, 2016

ST Future Economy Roundtable: Is Asia ready for the Fourth Industrial Revolution? The Straits Times

<http://www.straitstimes.com/asia/is-asia-ready-for-the-fourth-industrial-revolution>



"It's quite clear that the established models of education have to change and adapt to the new environment."

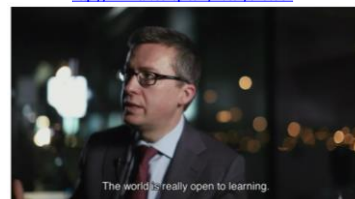
23

April 13, 2016

The Fourth Industrial Revolution: What it means, how to respond

Klaus Schwab, Founder and Executive Chairman, World Economic Forum

<http://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
<http://trainingshare.com/fourth-industrial-revolution-video-clip.php>
<http://www.tubechop.com/watch/92869981>



24

July 11, 2017

The Rise of the Phigital Learner

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

<http://trusteds12.com/phigital-digital-learning/>

May 15, 2017

3 must know's about the rising "phigital" student-and why their impact is enormous, Maria Stansbury, eCampus News

<https://www.ecampusnews.com/campus-administration/education-gen-z-phigital-student/>



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July 30, 2020

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



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Part II. Education 20/20

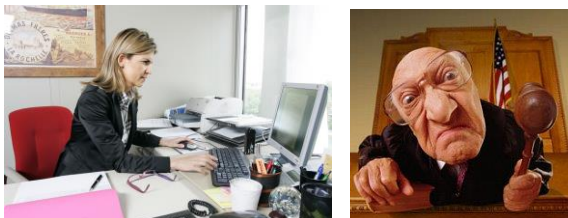


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From Instructor as Credit Manager and Court Room Judge



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1. Instructor as Counselor



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2. Instructor as Consultant



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3. Instructor as Conductor



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4. Instructor as Course Ambassador



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5. Instructor as Curator



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6. Instructor as Concierge



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7. Instructor as Camping Trip Guide



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8. Instructor as Cultivator



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20 New Roles of the Instructor



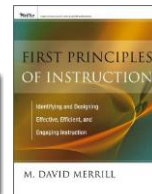
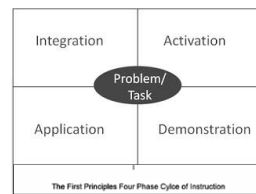
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Merrill's First Principles of Teaching/Instruction

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



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

<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
<http://www.applicatibai.com/articles/education-4-0/>



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1. The Principle of Flexibility

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



42

2. The Principle of Convenience

<http://travelinman.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.)



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3. The Principle of Collegiality

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., help turn papers into publications, introduce students to colleagues, ask them to share resources and papers with you, etc.)



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4. The Principle of Cheerfulness and Optimism

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., smile, celebrate accomplishments, positive feedback before any criticisms, etc.)



45

5. The Principle of High Expectations

<http://travelinman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>
(e.g., post high quality student work, challenge, offer job aids, mention students prior successes like conference presentations from final projects, etc.)



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6. The Principle of Choice and Options

<http://travelinman.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.)



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7. The Principle of Empowerment and Autonomy

<http://travelinman.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.)



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8. The Principle of Support and Feedback

<http://travellinedman.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.)



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9. The Principle of Spontaneity

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



50

10. The Principle of Organization

<http://travellinedman.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 bio and pics, arrange order of student presentations, etc.)



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11. The Principle of Sharing

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



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12. The Principle of Nontraditional Learning

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



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13. The Principle of Passion and Inspiration

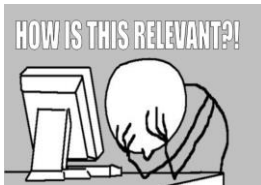
<http://travellinedman.blogspot.com/2011/05/bonks-last-principles-of-instruction.html>



54

14. The Principle of Relevance and Meaningfulness

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



55

15. The Principle of Trial and Error (i.e., it is ok to fail)

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



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16. The Principle of Expanded Resources

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



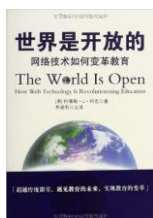
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The World of Open Education



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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



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The World is very open!

(South University of Science and Technology of China, Wednesday June 10, 2015)



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17. The Principle of Human Connectedness

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



62

18. The Principle of Cognitive Apprenticeship

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



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19. The Principle of Purpose and Vision

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



64

20. ??? (what is missing)

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



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

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



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Clearly... Learning is Changing!



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Part IV. Thirty Ways Learning is Changing...

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



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November 11, 2020

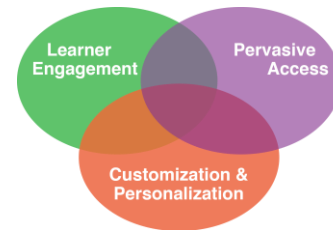
Educational technology is coming of age during the pandemic: Nowhere more so than in India

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



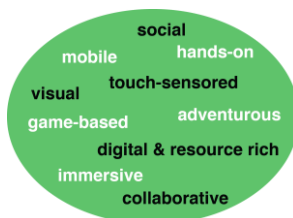
69

30+ Ways Learning is Changing: The Mega Trends



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



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April 20, 2020

Learning is Digitally Rich

New website offers tips for teachers about virtual special education

Carolyn Jones, April 20, 2020, EdSource

Teachers can share ideas online for serving students with disabilities during the pandemic

<https://edsource.org/2020/new-website-offers-tips-for-teachers-about-virtual-special-education/528741>

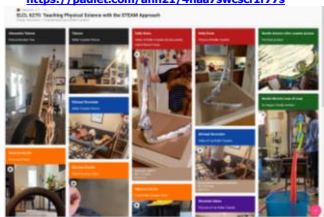


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March 21, 2021

Learning is Digitally Rich

ELCL 6270: Teaching Physical Science with the STEAM Approach
 Heejeung An: ANH2@upuri.edu, William Paterson University
<https://padlet.com/anh21/4haa7swscsf1r77s>

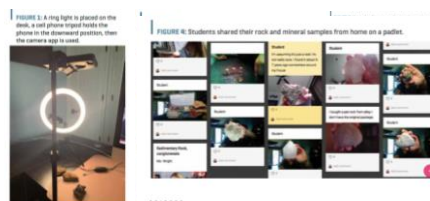


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January/February 2021

Engaging Students in Online Learning Using Teacher Demonstration

By Denise Wright, The Online Teacher, NSTA

<https://www.nsta.org/science-education/science-education-research/2021/engaging-students-online-learning-using-teacher>


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July 26, 2020

Learning is Digitally Rich

EDUCATING ALL LEARNERS DURING THE COVID-19 DISASTER
 An alliance dedicated to equity for complex learners

<https://www.educatingalllearners.org/>
 Resources and Guidance for Educators
<https://www.educatingalllearners.org/for-educators>
<https://www.educatingalllearners.org/>



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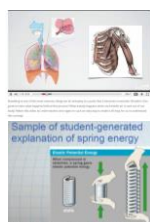
March 1, 2021

Learning is Hands-on
Student Designed Videos
M-Learning for K-12 Education

Terri and Terri <https://www.youtube.com/watch?v=7QK2B9aZuZk&feature=youtu.be>
 Amy Papst: <https://www.youtube.com/watch?v=ykqyGdGf&feature=youtu.be>
 QIU, Guanghui: <http://www.youtube.com/watch?v=7QK2B9aZuZk&feature=youtu.be>
 Miguel Lara (Web 2.0 FREEDOM): <http://www.youtube.com/watch?v=BcmCFW9IW8>
 Kimberly Vincent: <https://www.youtube.com/watch?v=pblU8sSALWo>



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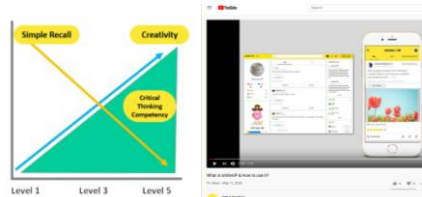
Interactive Labs and Simulations
Learning is More Hands-on
<http://phet.colorado.edu/en/simulation/energy-skate-park>


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May 11, 2020

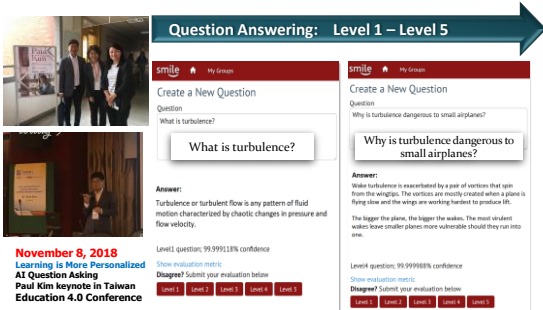
Learning is More Game-based
What is smileUP & How to use it?

SMILE, Paul Kim at Stanford

<https://www.youtube.com/watch?v=pblU8sSALWo>


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Question Answering: Level 1 – Level 5



November 8, 2018
Learning is More Personalized
AI Question Asking
Paul Kim keynote in Taiwan
Education 4.0 Conference

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Level 1

- When did Elon successfully launch the SpaceX program?
- Who admitted that launching the car into space was "kind of silly and fun"?

Level 2

- What are the things Tesla designed?
- What were the things Tesla couldn't determine the cause of?

Level 3

- How do you compare Elon Musk and Nicolas Tesla?
- How is Mars different from Jupiter?

Level 4

- Why did Tesla built a plant in Colorado, not in New York?
- Why did Tesla at first consider whether they were "electrical disturbances as are produced by the sun"?

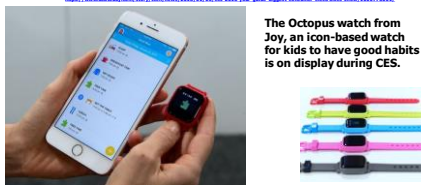
Level 5

- If he did not devise ever-more sensitive receivers to detect these waves, what could have been the consequence?
- If he did not introduce the AC motor in the late 1880, what would have been the consequence?

(Paul Kim, Taiwan, November 2018)

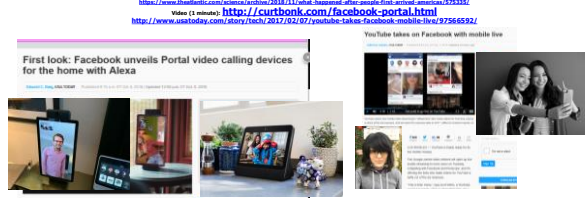
80

January 3, 2018
Learning is More Mobile
CES 2018: Your guide to the biggest
consumer electronics show
USA Today



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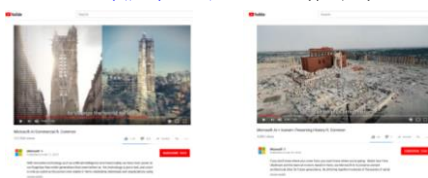
October 8, 2018
Learning is More Social
First look: Facebook unveils Portal video
calling devices for the home with Alexa
Edward C. Baig, The USA Today



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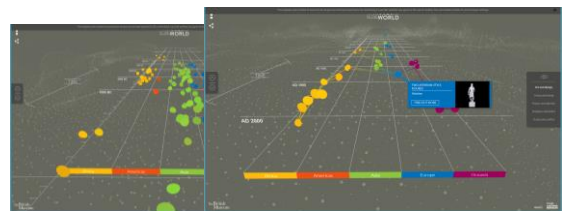
April 22, 2018
Learning is More Visual
Microsoft AI Commercial ft. Common

Video 1:00: Microsoft AI Commercial ft. Common <https://www.youtube.com/watch?v=9uac72hhb4/> (Feb 11, 2018)
 Video 1:46: Microsoft AI: Amplifying Human Ingenuity <https://www.youtube.com/watch?v=CNoimU72NP0g>
 Video 1:00: Microsoft AI: Empowering Innovators ft. Common <https://www.youtube.com/watch?v=250mgd4Xnw>
 Video 1:10: Microsoft AI + Common: Preserving History ft. Common <https://www.youtube.com/watch?v=20ZjaTh4SM> (April 22, 2018)
 Video 0:44: Microsoft AI + The Yield: Taking the guesswork out of farming ft. Common <https://www.youtube.com/watch?v=7zaufdGHh0> (April 22, 2018)



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

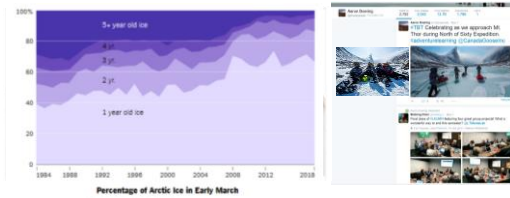


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May 14, 2018 (Engagement)
Learning is More Adventurous

Aaron Doering, Chasing Seals, TEDx

<https://chasingseals.com/>
<https://twitter.com/chasingseals>
<https://www.nytimes.com/interactive/2018/05/14/climate/arctic-sea-ice.html>



85

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-ways-districts-can-use-ar-and-ai/>



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.

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

<https://newlearningtimes.com/2017/07/17/learning-chemistry-in-virtual-reality/>
 1:38 video: <https://vimeo.com/246849454/38377>
 All: <http://curtbonk.com/chemistry-in-vr/>
 05:42: <http://curtbonk.com/chemistry-in-vr/>
 40:14: <http://curtbonk.com/chemistry-in-vr/>
 1:16:41: <http://curtbonk.com/chemistry-in-vr/>



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May 18, 2017
Learning is More Immersive

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



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



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June 23, 2020
Learning is More Synchronous
 Turns Out You Can Build Community in a Zoom Classroom

Rachel Toor, The Chronicle of Higher Education

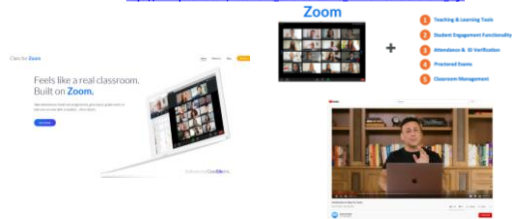
<https://www.chronicle.com/article/Zoom-Boom>



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September 23, 2020 Learning is More Synchronous

Introduction to Class for Zoom
Michael Chasen, Co-Founder & CEO of Class for Zoom
https://www.youtube.com/watch?time_continue=3&v=3_2MYE0isR&feature=emb_logo



91

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>



92

June 5, 2018

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://wearechatterbox.org/>
Mursal Hedayat, London
<https://www.youtube.com/watch?v=3K3YexuIp0>

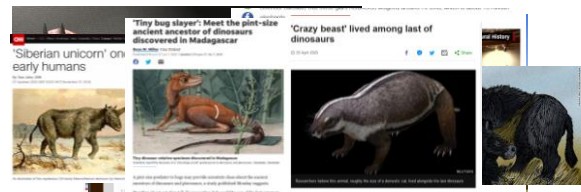


93

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/news/nation/2020/07/06/holy-grail-dinosaur-fossils-egypt/5610441002/>
'Siberian unicorn' once walked among early humans, Tara John, CNN
<https://edition.cnn.com/2020/07/12/science/siberian-unicorn-humans-early/index.html>
<https://www.wired.com/story/egypt-dinosaur-fossils/>
Video: 53 seconds

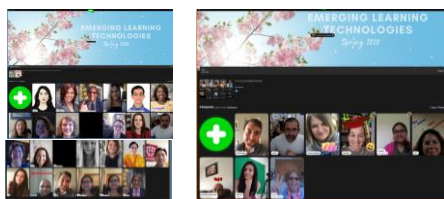


94

April 11, 2020

Learning is More Video-based... (e.g., Flipgrid)

Ed Tech with Adam: <https://www.youtube.com/watch?v=hysv0PwqFs>
<https://theorchestrator.com/2018/06/18/microsoft-acquires-social-learning-platform-flipgrid/>



95

April 29, 2020

Learning is More Video-based...

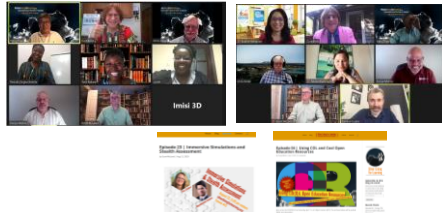
Animated COVID-19 prevention video goes viral
Mandy Erickson, SCOPE Stanford Medicine
<https://scope.stanford.edu/2020/04/29/animated-covid-19-prevention-video-goes-viral/>
<https://www.youtube.com/watch?v=UcDduwQ8g>



96

July 25, 2020
Learning is More Video-based...
Silver Lining for Learning

<https://silverliningforlearning.org/>
https://www.youtube.com/channel/UC9XEsh89qrTpmVYpQc_aA/live



97

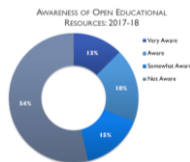
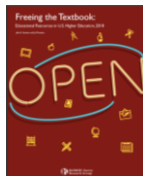
March 19, 2018
Learning is More Free and Open
Open Textbook Network

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



98

January 9, 2019
2018 National Higher Education Report
Freeing the Textbook: Open Education Resources in
U.S. Higher Education, 2018
 Julie E. Seaman and Jeff Seaman
<https://www.onlinelearningsurvey.com/reports/freeingthetextbook2018.pdf>



99

August 9, 2017
Learning is More Free and Open
Modern State Education Alliance
<https://modernstates.org/>

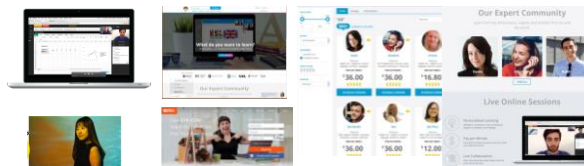


New Venture Will Offer Free Courses That Students Can Take for College Credit
 By Gidder Blumengren | AUGUST 28, 2017

100

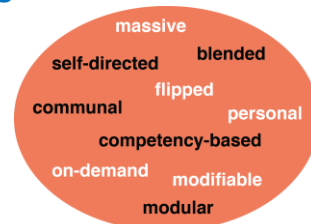
March 21, 2018
Learning is More Direct from Experts
TeachMeNow and VIPKid

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 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/>



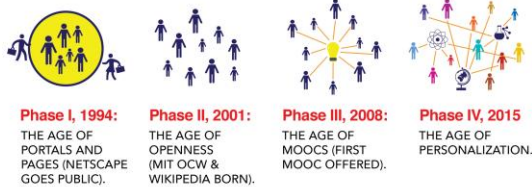
101

How Learning is Changing:
Mega Trend #3. Customization



102

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



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

103

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/>



104

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>



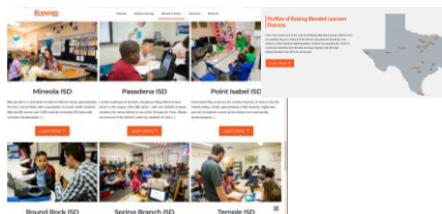
105

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



106

August 22, 2020 Learning is More Blended Blended in Action Raise Your Hand Texas <https://www.raiseyourhandtexas.org/learning/blended-in-action/>



107

August 23, 2020 Tips and Guidelines Catlin Tucker blog <https://catlintucker.com/>



108

September 17, 2018

Learning is More On Demand

Talk to Books

<https://books.google.com/talktobooks/>
<https://ar.com/1232664/talk-to-books-at-ted-2018-ey-harvard-univelle-google-announcing-new-search-tool-will-allow-us-questions-for-reading-thousands-of-books/>



109

May 9, 2017 (Customization)

Learning is More On Demand (PDAs)

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/news/2017/05/09/amazon-echo-show-touchscreen-voice-alexa/101448864/>
 24 seconds: <http://courtbomb.com/jetsons24.html>
 44 Seconds: <http://courtbomb.com/jetsons44.html>



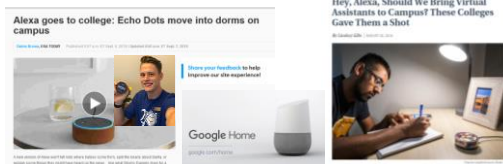
110

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/246129>



111

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/experience-chatbots-higher-ed>
<https://www.usatoday.com/story/tech/2019/11/09/alexa-google-assistant-ai-robots-become-substitute-friends/4057885002/>



112

October 12, 2018 (Customization)

Learning is More on Modular

edX Expands MicroMasters Programs With Data Science ("nanodegrees")

Digital Leadership and More, Sri Ravipati, Campus Technology

<https://campustechnology.com/2018/10/12/edx-expands-micromasters-programs-with-data-science-nanodegrees/>

Lindsey McKenzie, Inside Higher Ed
<https://www.insidehighered.com/news/2018/10/12/edx-expands-micromasters-programs-with-data-science-nanodegrees/>



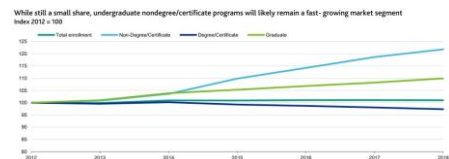
113

August 27, 2020

Alternative Credentials on the Rise

Paul Fain, Inside Higher Ed

<https://www.insidehighered.com/news/2020/08/27/alternative-credentials-short-term-credentials-will-it-be-sustained>



Sources: Moody's, U.S. Department of Education

114

Professional Certificates October 3, 2019 Google IT Professional Certificates Coursera Blog

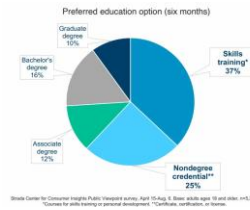
<https://arrow.google/programs/it-support/?id=wks&source=am&sourceId=61263>
Video: Melinda Williams Aspiring IT Support Specialist (2:57)
https://www.youtube.com/watch?time_continue=1&v=PKZWfWm8&feature=emb_logo



115

August 27, 2020 Alternative Credentials on the Rise Paul Fain, Inside Higher Ed

<https://www.insidehighered.com/news/2020/08/27/alternative-credentials-are-also-being-validated-will-it-be-validated>



116

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%).

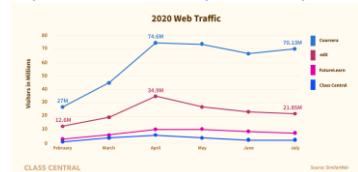
Highest Enrollment Surges by Country Since Shelter in Place



117

MOOCs Stats

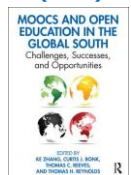
August 16, 2020 By the Numbers: MOOCs During the Pandemic Dhawal Shah, Class Central <https://www.classcentral.com/report/mooc-stats-pandemic/>



118



MOOCs book (2020)



119

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.



120

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 Ostashevski

Week 1: Models of Technology-Enabled Learning

- 1.1 Community of Inquiry
- 1.2 Two Models: TPACK and TIM
- 1.3 On Teaching Presence

Week 2: Technology in Education

- 2.1 Integrating Technology in Education
- 2.2 Benefits of Technology in Education

Week 3: Open Educational Resources

- 3.1 Understanding OER
- 3.2 Types of Open Licenses
- 3.3 Finding Open Educational Resources

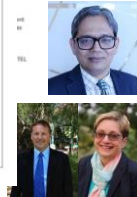
Week 4: Application of Technology

- 4.1 Practical Applications of Technology
- 4.2 Getting Help with Technology

Week 5: Creating Technology-Enabled Learning

- 5.1 Creating Technology-Enabled Learning

FIGURE 14.2 Weekly course content of TEL MOOC.



November 26, 2019

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



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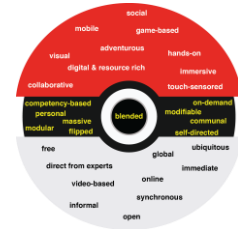
November 26, 2019

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.agmooc.in/>



123

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



124

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/news/2019/06/08/the-second-half-of-humanity-is-joining-the-internet>

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



125

Part V. Trends for Tomorrow

http://www.huffpost.com/entry/marie-kourougianni/prepare-for-future-learn_b_16407755.html

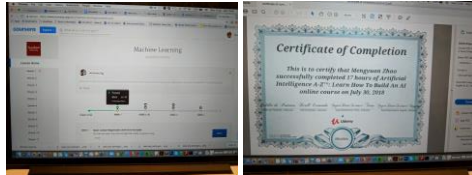
How Human Is Too Human for Robots?
By Tom Ichniowski



126

August 1, 2018**1. Independent Studies Via MOOCs****MOOC: AI A-Z: Learning How to Build an AI Online Course and Machine Learning**

Mengyuan Zhao

<https://www.udacity.com/artificial-intelligence-ai/><https://www.coursera.org/learn/machine-learning>

127

October 12, 2018**2. OER-Based Courses and Programs****The Chronicle of Higher Education****Launching OER Degree Pathways:**

An Early Snapshot of Achieving the Dream's OER Degree Initiative and Emerging Lessons
<https://www.chronicle.com/article/achieving-the-dreams-oer-degree-initiative-and-emerging-lessons>
 Griffiths, R., Gardner, S., Lundh, P., Shear, L., Ball, A., Milevsky, J., Wang, S., Desrochers, D., Stalsloff, R. (2018). *Participant Experiences and Financial Impacts: Findings from Year 2 of Achieving the Dream's OER Degree Initiative*. Menlo Park, CA: SR1 International.

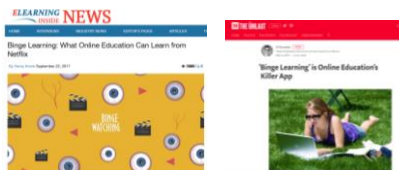


- Saving money with open-ed resources.
- A large-scale effort to encourage the use of open-education resources has helped students save money and bolstered their learning, according to a report released today, on the findings from the second year of Achieving the Dream's OER Degree Initiative. The study found that:
 - Students saved between \$66 and \$122 per course.
 - Over 60 percent of students reported that the overall quality of their learning experience in an OER course was higher in comparison to a typical, non-OER course.
 - The number of OER courses at participating institutions jumped from 13 in 2016 to 385 in the spring of 2018; the number of students enrolled in OER courses went from 3,404 in 2016 to 37,398 in 2017.

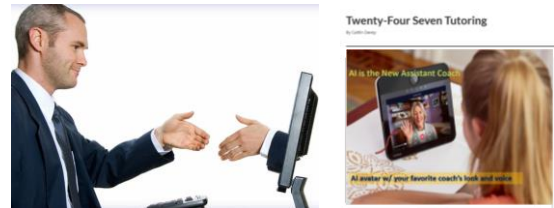
128

September 22, 2017**3. Binge Learning Experiences****What Online Education Can Learn from Netflix**

Henry Kronk, E-learning Inside News

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

129

June 11, 2017 (New Learning Times)**4. Rise of Super E-Mentors and AI Coaches (Paul Kim, 2018)**

130

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/ai-academia-push-app-and-use-ai-higher-ed-teaching-and-learning>
<https://www.bbc.com/news/technology-46810818>
https://www.youtube.com/watch?v=75m5_c0f0u8
 1:17: <http://curtbook.com/mandarin.html>



131

January 30, 2017**6. Professor Einstein PDA's**<http://www.usatoday.com/story/tech/2017/01/30/robotic-barista-now-serving-milly-frost/9588780/>

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-milly-frost/9588780/>

132

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.



133

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."

134

Chat Window Poll: Is this an Evolution or Revolution?

135

We are entering a jumping off point...

(South University of Science and Technology of China, Wednesday June 10, 2015)



136

Things are heating up!

137

The Learning Revolution is coming within reach!

138

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

"I cannot do this alone."
 "I cannot do this alone."
 "I cannot do this alone."



139

Any Questions or Comments?

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



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