

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

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<http://curtbonk.com/>



1

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



2

Talk Overview

1. Technology Yesterday
2. Technology Today
30 ways learning is changing...
5. Technology Trends of Tomorrow



3

July 30, 2020
Part 1: Technology Yesterday

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



4

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-543727>



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

5

June 3, 2017


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

<https://www.youtube.com/watch?v=tTmWcGhXqA>
<https://news.elearninginside.com/how-plato-changed-the-world-in-1960/>
PLATO was the first generalist computer-assisted instruction system. Starting in 1960, it ran on the University of Illinois SILLIAC 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.



6

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/4242/reader-rabbit-future-the-quest-to-recreate-educational-games-1980s-1990s>
 Rocky's Boots: <https://www.youtube.com/watch?v=a-NUd5Bn1Xk>
 Project YES (Curt Bonk): <https://youtu.be/bZDSmQH4Ujs>



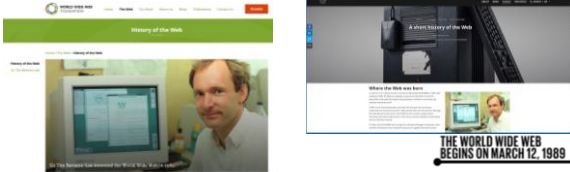
7

34 years ago...
Knowledge Navigator (1987)
Apple Computer
<http://www.youtube.com/watch?v=h4AaF8wE6c>



8

August 6, 2021
The Web is now 30+!
<http://info.cern.ch/> (First website)
<http://money.com.com/2016/08/06/technology/world-wide-web-30-years-old/index.html#h3e-the-stack-olm>
<https://webfoundation.org/2016/08/06/history-of-the-web/>
<https://thema.com/science/computing/birth-web/short-history-web>



9

January 15, 2021
Wikipedia is now 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/a34512278/wikipedia-at-20/>
<https://wikipedia20.pubpub.org/>




10

April 4, 2021
MIT OpenCourseWare is now 20+!
<https://www.youtube.com/watch?v=9nAEmhJHUI>
<https://ocw.mit.edu/about/milestones/>
<https://news.mit.edu/2021/mit-courseware-educational-resource-to-millions-0406>



11

Fast Forward to 2021...
"Anyone can now learn anything from anyone at any time."



12

Part 2. Technology Today Learning is Changing!



How Online Learning is
Changing Classroom Design



13

March 13, 2019 The Career Curriculum Continuum

Andrew Hermaly, Inside Higher Ed

<https://www.insidehighered.com/digital-learning/article/2019/03/13/inside-highered.com/stay-on-the-career-curriculum-flow-option>



14

February 25, 2020 The 60 Year Curriculum: Developing New Educational Models to Serve the Agile Labor Market

Chris Dede, Harvard University, The Evolllution

<https://www.insidehighered.com/digital-learning/article/2020/02/25/inside-highered.com/stay-on-the-career-curriculum-flow-option>

219: The 60-Year Curriculum with Rovy Branon

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

Learning for a Lifetime

219: The 60-Year Curriculum with Rovy Branon

Chris Dede, Harvard University, The Evolllution

<https://www.insidehighered.com/digital-learning/article/2020/02/25/inside-highered.com/stay-on-the-career-curriculum-flow-option>

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<https://www.insidehighered.com/digital-learning/article/2020/02/25/inside-highered.com/stay-on-the-career-curriculum-flow-option>

Education 20/20



15

16

20 New Roles of the Instructor

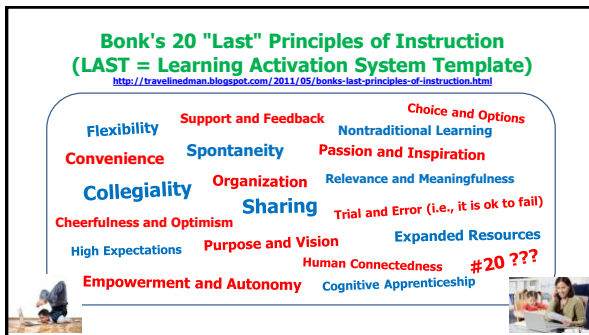
Captain **Course Ambassador** **Consumer Advocate**
Counselor **Curator** **Change Catalyst**
Conductor **Concierge** **Comedian**
Consultant **Camping Trip Guide** **Coach**
Community Organizer **Course Expedition Leader** **Collaborator**
Cultivator **Chemist** **Care Giver**
Colleague



17



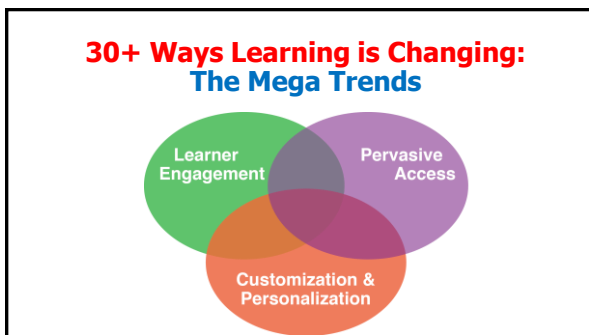
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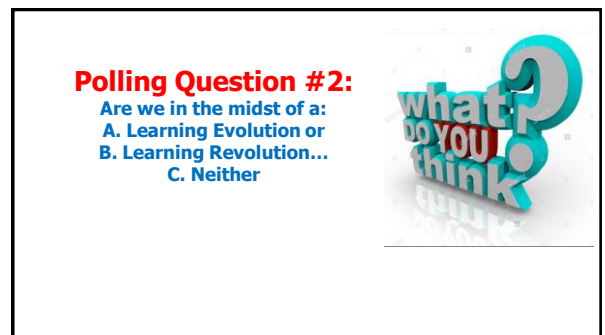
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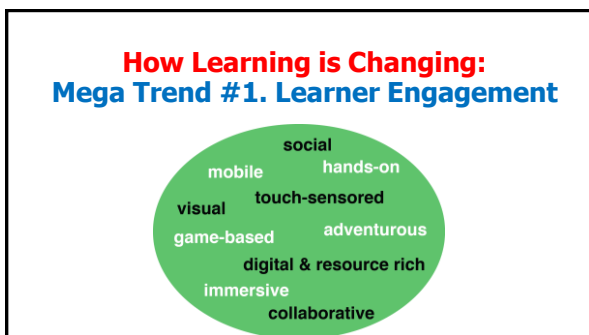
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23



24

July 2, 2021

Learning is Hands-on

Teaching coding and design can lead to tech literacy
Jean Sharp, eCampus News

<https://www.ecampusnews.com/2021/07/02/teaching-coding-and-design-can-lead-to-tech-literacy/>



Teaching coding and design can lead to tech literacy

Jean Sharp, CIO, Aspen Learning

April 2, 2021

Courses that help students build technology skills increase students' tech literacy and their ability to contribute to the workforce

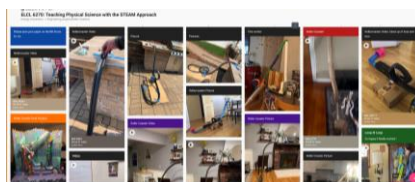
Encouraging technology creators means engaging students in project-based technology courses that introduce them to coding, design, gaming, and animation. And as students complete projects such as developing an app, creating a 3D video game, or designing a collection, they gain relevant, hands-on experience 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.

25

March 21, 2021

Learning is More Digitally Rich

ELCL 6270: Teaching Physical Science with the STEAM Approach
Heejung An, William Paterson University
Hands-on, Minds-on, Hearts-on, Social-on: A Collaborative Maker Project Integrating Arts in a Synchronous Online Environment for Teachers
<https://link.springer.com/article/10.1007/s11528-022-00740-x>
Based on the Thinking, Making, Sharing, and Reflecting (TMSR) model



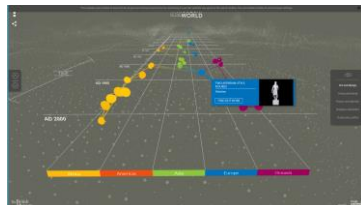
26

October 20, 2020

Learning is More Visual

The British Museum

<https://britishmuseum.withgoogle.com/>



27

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/>

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.



View the pyramids of Ancient Egypt in this 360 degree VR capture

A local VR capture allows users to explore the pyramids and other gems of Ancient Egypt



28

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/>

1:58 video: <https://vimeo.com/283327>

AR: <http://vimeo.com/chemistry-in-vr>

AR: <http://vimeo.com/chemistry-in-vr>

AR: <http://vimeo.com/chemistry-in-vr>

AR: <http://vimeo.com/chemistry-in-vr>

Learning Chemistry in Virtual Reality

by Sarah Hardman



Learning Chemistry in Virtual Reality

by Sarah Hardman



29

June 1, 2022

Learning is More Immersive

Meet the Metaverse

Michael B. Horn, Education Next

<https://www.educationnext.org/meet-the-metaverse-new-frontier-virtual-learning/>



30

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



31

June 13, 2022 (Khan World School) Learning is More Online

Behind Khan Academy And Arizona State University's Khan World School Launch, Michael B. Horn, Forbes
<https://www.forbes.com/sites/michaelhorn/2022/05/31/behind-khan-academy-and-arizona-state-universitys-khan-world-school-launch/>

At present, the Khan World School is drawing interest from students around the world. The school will be free for students in Arizona by taking advantage of ASU's charter school. But for those locations where it isn't a public option, Khan said that they will be able to offer the school for less than \$10,000.

The Khan World School is aiming to tackle that stereotype with a daily, synchronous seminar where students debate topics that often aren't discussed in schools—things like “Will the Fed be able to control inflation?”



32

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/tech/2021/07/01/gen-z-millennials-digital-life-more-memorable/77607802/>

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

Kate Mabus | USA TODAY
Published: July 1, 2021



What happens when digital learning surpasses in-person learning?

Statistics from a new survey by USA Today

Preparing for the 2021 fall semester will still be a challenge with such high levels of uncertainty—digital learning will be critical.

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.

33

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/>

OER Adoptions on the Rise

The number of faculty members choosing open educational resources over traditional textbooks has risen 14%.



OpenStax Saved 1 Million Students \$70 Million

By David L. Johnson | 12 August 2017



Open Textbook Network
WE ARE A COMMUNITY DEDICATED TO RESULTS

600+ Campuses represented

\$8.5 Million Student savings by OTN members

45% of faculty who attend an OTN workshop adopt an open textbook

34

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.



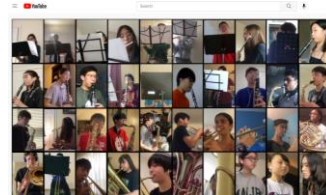
35

June 15, 2020

Learning is More Globally Collaborative

Lewis F. Cole Middle School Virtual Band Concert

9:13: https://www.youtube.com/watch?v=yqP15szu_C4



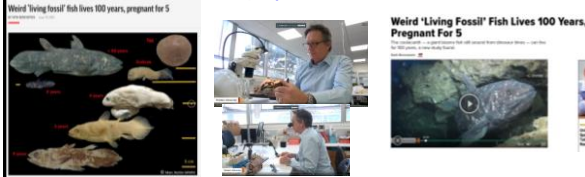
36

June 18, 2021

Learning is More Immediate...Science in the News
Weird 'living fossil' fish lives 100 years, pregnant for 5
Seth Borenstein, AP News

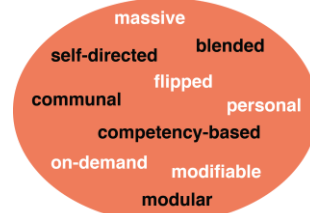
<https://apnews.com/article/fish-science-environment-and-nature-6364a1007aea49574a2b68aee6009a96>

Video (55 seconds): <https://curtbook.com/fish.html>



37

How Learning is Changing: Mega Trend #3. Customization



38

October 22, 2021

Wanted:
Billions of Self-Directed Learners

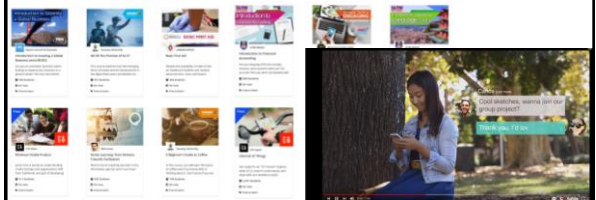


39

Learning is More Self-Directed
The LMS Market is Quickly Losing Ground

Carol Leaman, CLO

<https://www.openlearning.com/>
<https://www.openlearning.com/>



40

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/2021/03/20/online-classes-course-digital-marketing-video-production-coding-earn/4533844001/>

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



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



41

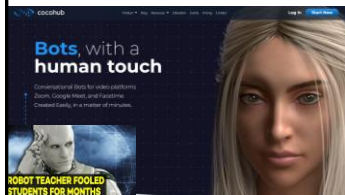
Mosaic Active Learning Classrooms
ALC for Pre-service Teachers' CSCL



42

December 12, 2021
Learning is More On Demand
Cocohub: Bots, with a human touch

<https://cocoai.com/ai/era-soroka-cocohub-3.com>



Chatting with Chatbots



43

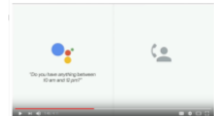
May 9, 2018
Learning is More On Demand
Conversation with Technology
Google Duplex Demo from Google IO 2018

Video (4:11): <https://www.youtube.com/watch?v=bdt1mEm2y08>

Video (2:05): <http://curtbonk.com/google-40-245.html>

Donat Clark Plan 8

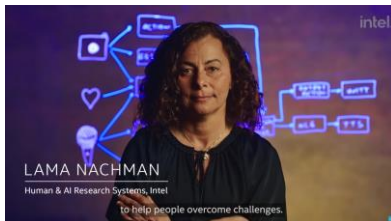
<https://donatclarkplan8.blogspot.co.uk/2018/05/google-duplex-demonstrated-at-iot-that-could.html>



44

June 21, 2020
Learning is More Personalized

Video #1 (1:55) (June 21, 2021): Meet the Brains Behind Intel Lab: Lama Nachma, <https://www.youtube.com/watch?v=vDnigA8rbxM>



45

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

Video (4:43): <https://www.youtube.com/watch?v=Ya8a5P01Hh>

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

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



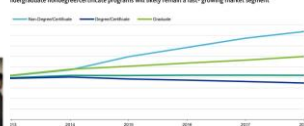
46

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

<https://www.insidehighered.com/news/2020/08/27/interact-online-what-are-online-credentials-will-it-be-sustained>

Google IT Professional Certificates

Integrate nondegree/certificate programs will likely remain a fast-growing market segment



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

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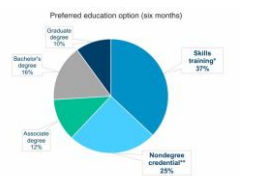
August 27, 2020
Alternative Credentials on the Rise

<https://www.insidehighered.com/news/2020/08/27/interact-online-what-are-online-credentials-will-it-be-sustained>

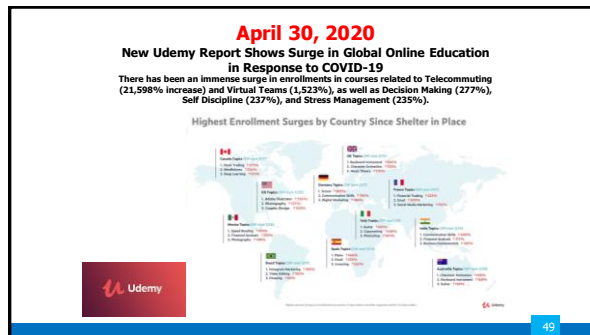
July 22, 2021

Shifting Paradigms: Understanding Institutional Perspectives on Microcredentialing

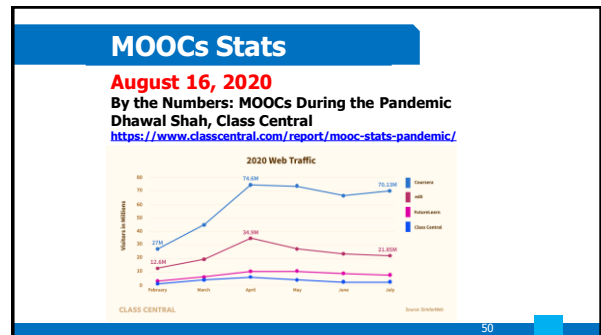
<https://moderncampus.com/pdfs/shifting-paradigms-understanding-institutional-perspectives-on-microcredentialing.pdf>



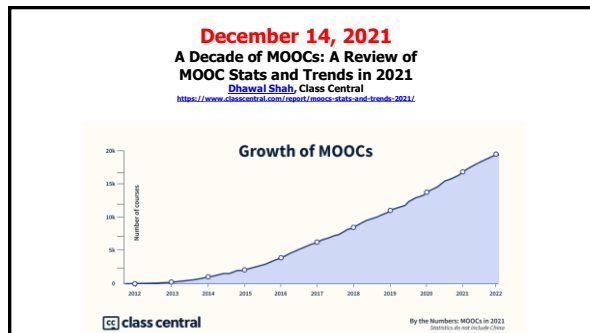
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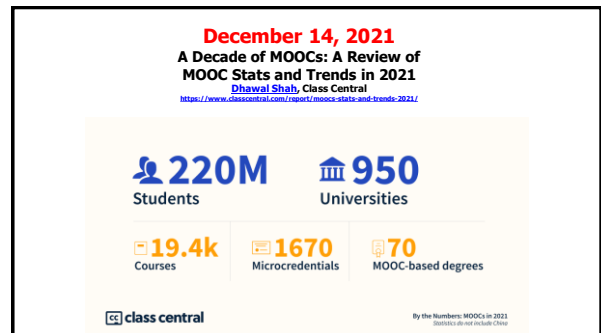
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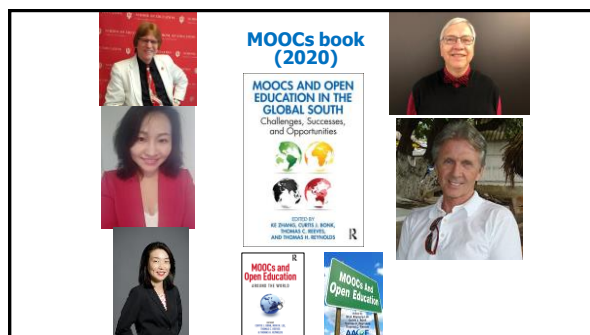
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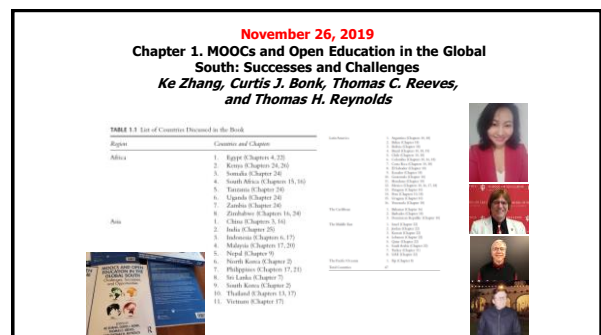
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The name of the Himalayan peak is Mt. Nilgiri with 7061 Meters height.

Bishwa Raj Gautam,
Program Specialist,
Regional English
Language Office
(RELO), U.S. Embassy,
Nepal.

With Baman Kumar Ghimire, Motherland Secondary School, Pokhara, Nepal






55

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.

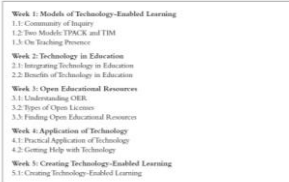


Likewise, lately reported that, a school whose head teacher and a few students I mentored in 2017 has about 350 students completing at least a MOOC. Acknowledging the benefits of MOOCing and the growing interest of the students and guardians, the school administration has made at least a MOOC compulsory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



56

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

57

November 26, 2019
Chapter 16: Courses for a Cause: MOOC Contributions to a "Better Place for All"
(Marianne Krasny et al., 2020)








58

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/>






59

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/stanford-coding-course-free-online/>




60


January 20, 2022
Francis and Dionne Najafi 100 Million Learners Global Initiative.
 Video (2:07):
https://vimeo.com/667987472?embedded=true&source=vimeo_logo&owner=13433234
<https://thunderbird.asu.edu/lifelong-learning/100-million-learners>

- Global Leadership in the Fourth Industrial Revolution
- Customer Experience and Digital Marketing in a Global World
- Global Entrepreneurship and Sustainable Business
- Data Analytics and Digital Transformation in a Global World
- Global Financial Accounting




61

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



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



63

Part 3. Technology Tomorrow
http://www.huffpost.com/entry/marie-bourcier/prepare-for-future-learn_164072756.html

How Human is Too Human for Robots?



64



65

1. Robot Collaborators/Partners
<http://www.buffymoon.com/1426666202/1426666202-Alexandra.html>



66

August 1, 2018

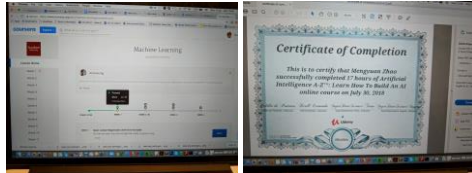
2. Independent Studies Via MOOCs

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

Mengyuan Zhao

<https://www.udacity.com/artificial-intelligence-az/>

<https://www.coursera.org/learn/machine-learning>



67

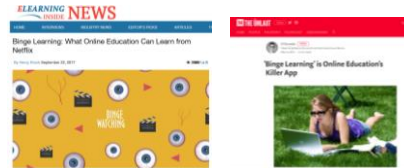
September 22, 2017

3. Binge Learning Experiences

What Online Education Can Learn from Netflix

Henry Kronk, E-learning Inside News

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



68

4. Rise of Super E-Mentors and AI Coaches



Twenty-Four Seven Tutoring



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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/interactive-pedagogy-will-higher-ed-teaching-and-learning>

<https://www.ibm.com/blogs/research/2018/08/mandarin-language-ai/>

<https://www.youtube.com/watch?v=cmjunge-c48g-7JasTut1R2A>

1:17 <http://curtbank.com/mandarin.html>



70

January 30, 2017

6. Professor Einstein PDA's

<http://www.usatoday.com/story/tech/2017/01/30/robotic-charlie-how-serving-really-fast/95888786/>



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-charlie-how-serving-really-fast/95888786/>

71

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.



72

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>

<https://www.usatoday.com/story/tech/2021/04/23/minecraft-online-forall-off-creating-metaverse/2006381502/>



73

9. World Knowledge Refreshment Stations

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



74

January 25, 2021**10. AI Generated Teachers**

Tom Bartlett, The Chronicle of Higher Education

<https://www.futureme.org/>

Dead Man Teaching

What's it like to find out your favorite name professor has been dead for almost two years? In a word, weird.

By Tom Bartlett | January 25, 2021



Professor Peter Dugan



Author Bartlett

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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."

76

Poll #4:**Is this an Evolution or Revolution?**

77

We are entering a jumping off point...

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



78

Things are heating up!



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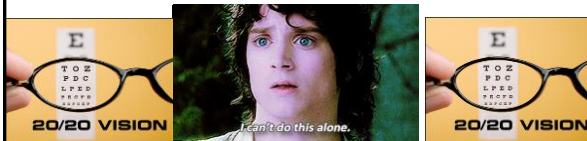
The Learning Revolution is coming within reach!



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

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



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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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