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Higher education in the 21st century.
Strategic threats and opportunities in a digital world.

Dr. Jorge Grünberg, Rector, Universidad ORT Uruguay.

World ORT Board of Representatives, Prague, May 2014.

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Higher education.
The calm before the storm.

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Social trends in the 21st century: Valorization of knowledge.

- **Knowledge and talent have become the key source of wealth and sustainable competitive advantage.**

- **Who are now the richest countries?**
  The ones who have oil or those who produce knowledge and nurture talent?

- **High stakes for individuals excluded from high-quality higher education. A university degree will be the minimum entry-level qualification to function in the creative economy.**

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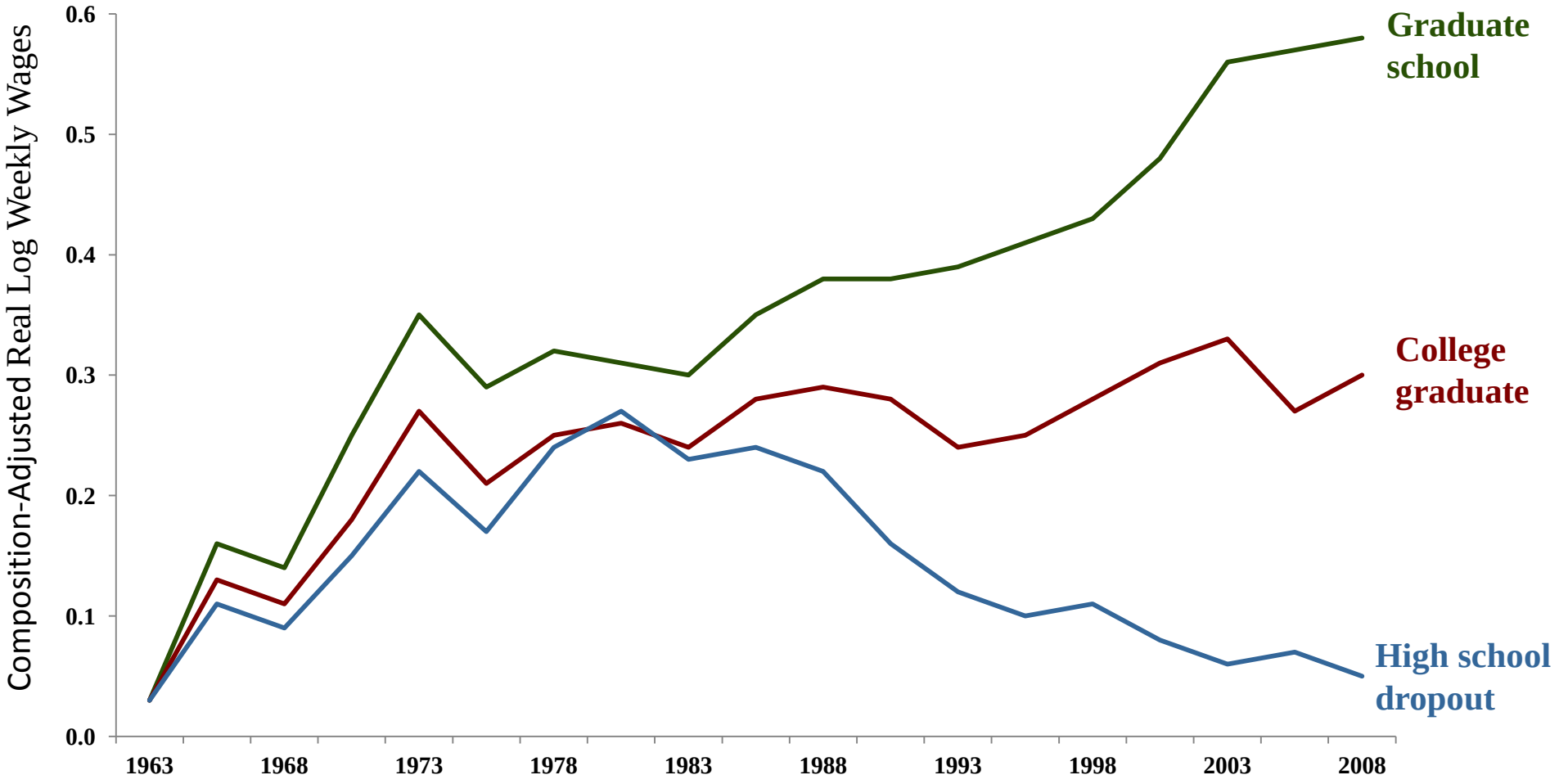
Changes in wages for full-time male U.S. workers, 1963-2008.



Source: Acemoglu and autor analysis of the Current Population Survey for 1963-2008.

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Social trends in the 21st century: globalization, automation and digitization.

- **No market is out of reach but no job is secure.**
- **You are within reach of jobs and customers on the other side of the world. But you are also in competition with the best talent in the world.**
- **Many jobs are disappearing as computers become cleverer.**

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The effects of digitization.

Kodak

140.000 workers
(filed for bankrupcy in 2012).

Instagram

13 workers
(sold to Facebook for 1 billion dollars in 2012).

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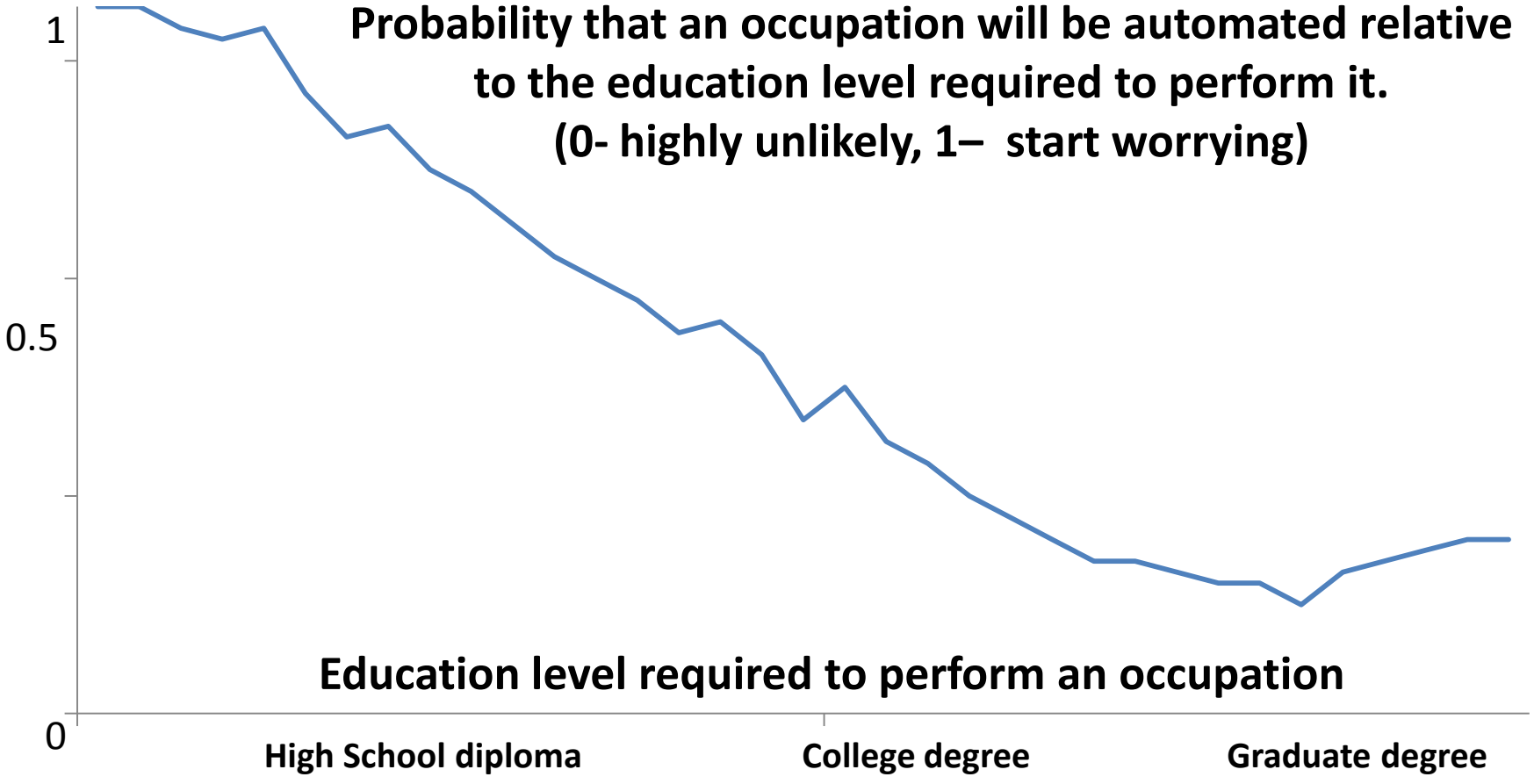
The effects of automation: Probability that your job will dissapear.



Source: *Personal calculations based on Frey, C.B. & Osborne, M.A. (2013, Setiembre). The future of employment: how susceptible are jobs to computerisation?. Accessed 12 May, 2014 from* http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

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Occupations at high risk of disappearing (due to automation).

Probability	Occupation
0.98	Models
0.98	Sports umpires and referees
0.97	Cashiers
0.96	Cooks
0.96	Secretaries
0.94	Accountants and auditors
0.86	Taxi and bus drivers

Source*: Frey, C.B. & Osborne, M.A. (2013, Setiembre). The future of employment: how susceptible are jobs to computerisation?. Accessed 12 May, 2014 from* http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

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Occupations at low risk of disappearing.

Probability	Occupation
0.004	Choreographers
0.004	Fire fighters
0.004	Physicians and surgeons
0.004	Police detectives
0.004	Teachers
0.005	School principals
0.007	Athletic trainers
0.01	Artists

Source*: Frey, C.B. & Osborne, M.A. (2013, Setiembre). The future of employment: how susceptible are jobs to computerisation?. Accessed 12 May, 2014 from* http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

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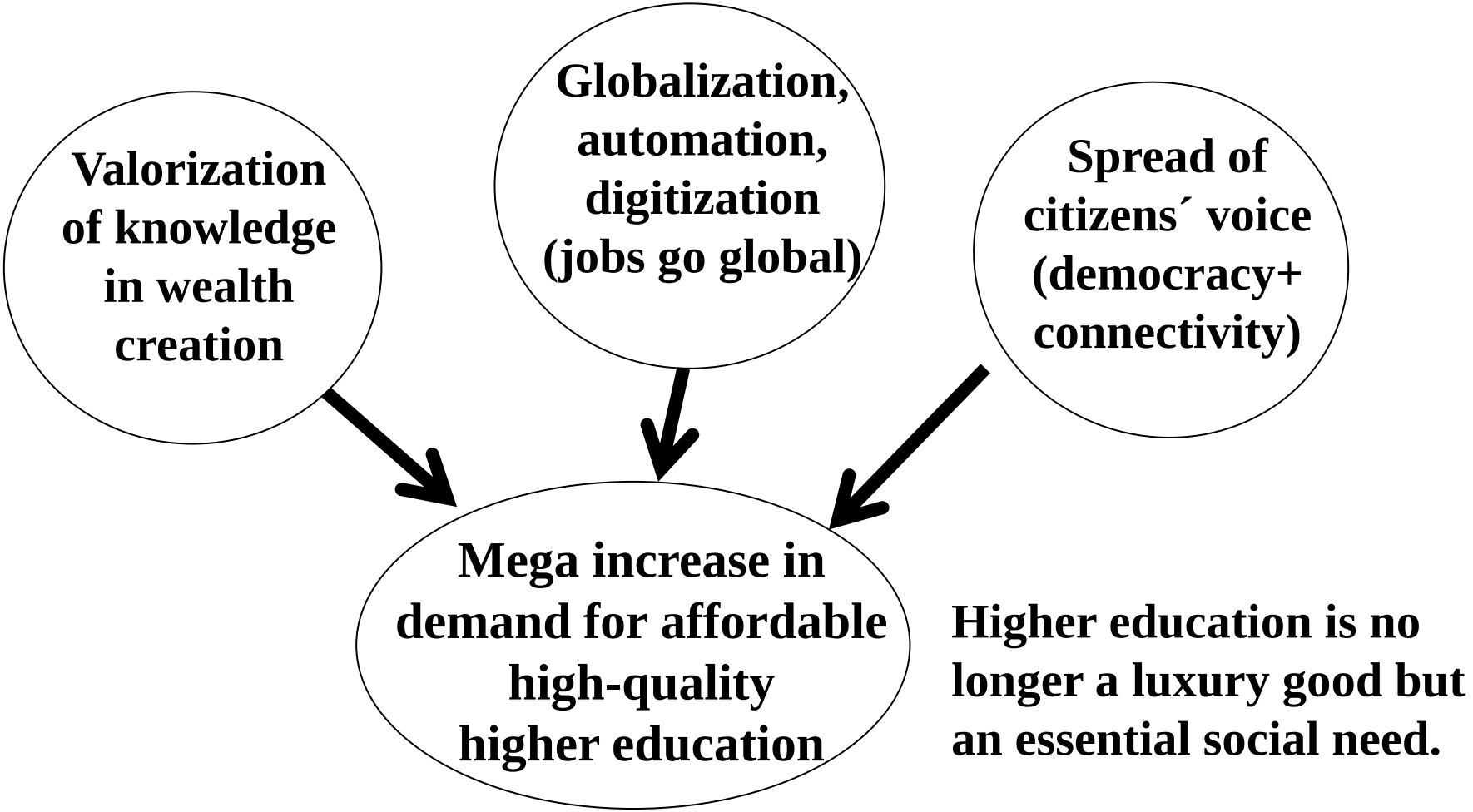
Forces leading to fundamental change in higher education.



Higher education is no longer a luxury good but an essential social need.

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Human development is a race between education and technology.

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Access to higher education as a social bottleneck for progress.

- **There are not enough teachers to provide high quality advanced education to all seekers. Teaching is a personalized service.**
- **Teaching productivity is constrained by the "Baumol effect" (a string quartet cannot become more productive by playing faster).**
- **To raise productivity, teaching must be unconstrained by co-location, co-temporality and linearity (more students requiring proportionally more teachers and buildings).**

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Socratic teaching: excellent for a lucky few.

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“Industrialised teaching": uniform content and pace for many.

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Historical trade-offs in education: personalization or coverage?

Agrarian economy	Industrial economy	Knowledge economy
Socratic teaching High personalisation Low coverage Quality of the land	**“Industrialized” teaching** Low personalization High coverage Quality of the tools	**“Networked” teaching** High personalization High coverage Quality of cognitive abilities

Organizational change

- uniformisation of content
- Impersonal teaching techniques
- logistic organization based on age

Technological change

?

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Education must meet modernity.

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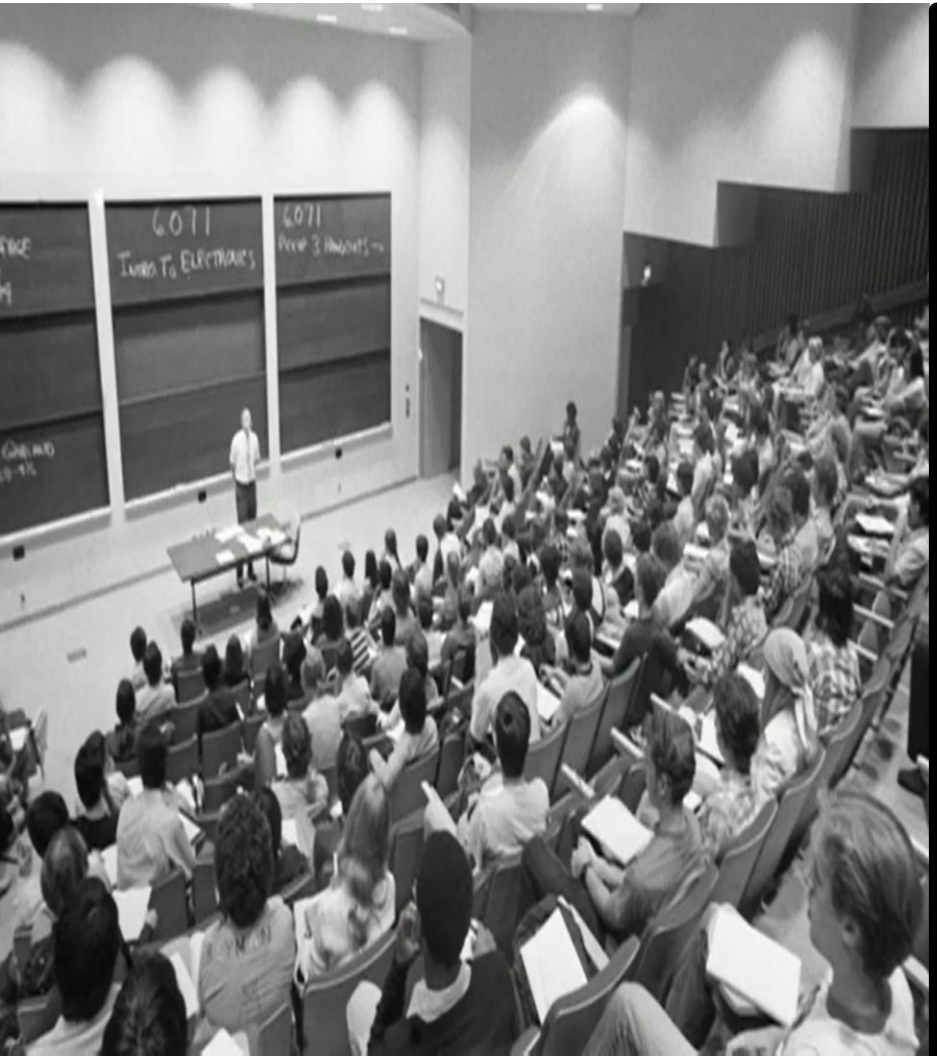
MIT classroom, 1954 and 2014. (spot the difference)



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The most recent technological change in education took place before Columbus discovered America (the printing press, 1450).

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ICT failed to transform education to the same extent than most other human activities.

- **Teaching is an artisanal service with industrialized delivery where the impact of ICT on productivity is limited (think of concert live music, competitive sports, physiotherapy or software programming).**

- **Slow educational change might be explained by the low opportunity cost of students, the fact that failure is found in the long term and unatributability of outcomes.**

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Is higher education ripe for "disruption"?

- **The centuries-old university model was shaped by the high costs of travel and the necessity of physical presence for access to teachers and books.**

- **Universities bundle teaching, assessment, credentialling and research. This vertical integration introduces inefficiencies and conflicts of interest.**

- **Disruptive innovations start by offering benefits to people who had previously been unserved by the existing providers technologies.**

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Little Toyota disrupted big GM in the 1960´s.

Toyota 1960
(approx. US$ 1 200)

GM Pontiac 1960
(approx. US$ 3 000)

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Who is the big car maker now?

GM Spark
(approx. US$ 12 000)

Toyota Lexus
(approx. US$ 43 500)

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Waves of Digital Disruption.

1995+	2010+	2015+	…
Music Photography Books	TV News Travel Recruitment	Retail Finance Transport Education?	

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Innovations that might disrupt higher education.

- **MOOC (massive open online courses).**
- **Flipped teaching.**
- **Educational Games.**
- **Big data, learning analytics + artificial intelligence recommendation systems**

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Massive open online courses (MOOCs).

- **MOOCs provide interactive on-line teaching, based on video lectures and peer-to-peer support groups.**
- **Online learning is highly scalable, the expense of adding an additional student is close to zero (0 marginal cost).**
- **MOOCs, are hailed as a disruptive innovation that will do to higher education what the Internet has done to newspapers or what Napster did to music.**
- **MOOC critics object their lack of “personalization” but,**

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How personalized is this setting?

“Are you talking to me?”

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University of Obafemi Awolowo, Nigeria.
Is this not “distant” education?

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Flipped teaching.

- **Teachers assign lectures to watch at home and save class time for working on homework together.**

- **Flipping uses the resources on the Internet to free up valuable teacher classroom time, changes the teacher-student relationship and opens the door to “discovered” learning.**

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Educational games.

- **Games are goal-oriented, have strong social components and simulate real world experience.**
- **Ideal method of assessing student comprehension, provides immediate performance feedback to the players.**
- **Allows for experimentation, the exploration of identities, and a safe place to learn from failure.**

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"I cannot teach
anybody anything,
I can only make
them think."

Socrates.

Thank you for your attention.
Sorry to disrupt you!