"Should I ban laptop use in class?"

…and Other Questions of Digital-Age Faculty

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"We can provide truly world-class online courses to everyone, everywhere, regardless of social status or income, while also improving on-campus education."

– Anant Agarwal (President, edX; 2014)

Source: https://www.forbes.com/sites/rahimkanani/2014/06/21/edx-ceo-anant-agarwal-on-the-future-of-online-learning/#5a5418481016

“Information networks are … making governments more accountable.”

– Hillary Clinton (2011)

Source: Clinton, Hillary. (2010). Remarks on Internet Freedom. http://www.state.gov/secretary/rm/2010/01/135519.htm
Photo:http://www.northcountrypublicradio.org/news/npr/174858681/on-twitter-s-4th-birthday-is-twitter-still-the-free-speech-party

“The richest 500 million [people] have way more money than the next six billion combined. You solve that by getting everyone online.”

– Mark Zuckerberg (2015)

Source: http://www.wired.com/2013/08/mark-zuckerberg-internet-org/

Photo: http://www.ibtimes.com/zuckerberg-tells-mobile-carriers-internetorg-will-get-people-paying-data-once-they-1833250

Outline

Introduction

Technology in the World’s Largest Democracy

Debunking Technology Myths

Technology’s Law of Amplification

Recommendations for University Instruction

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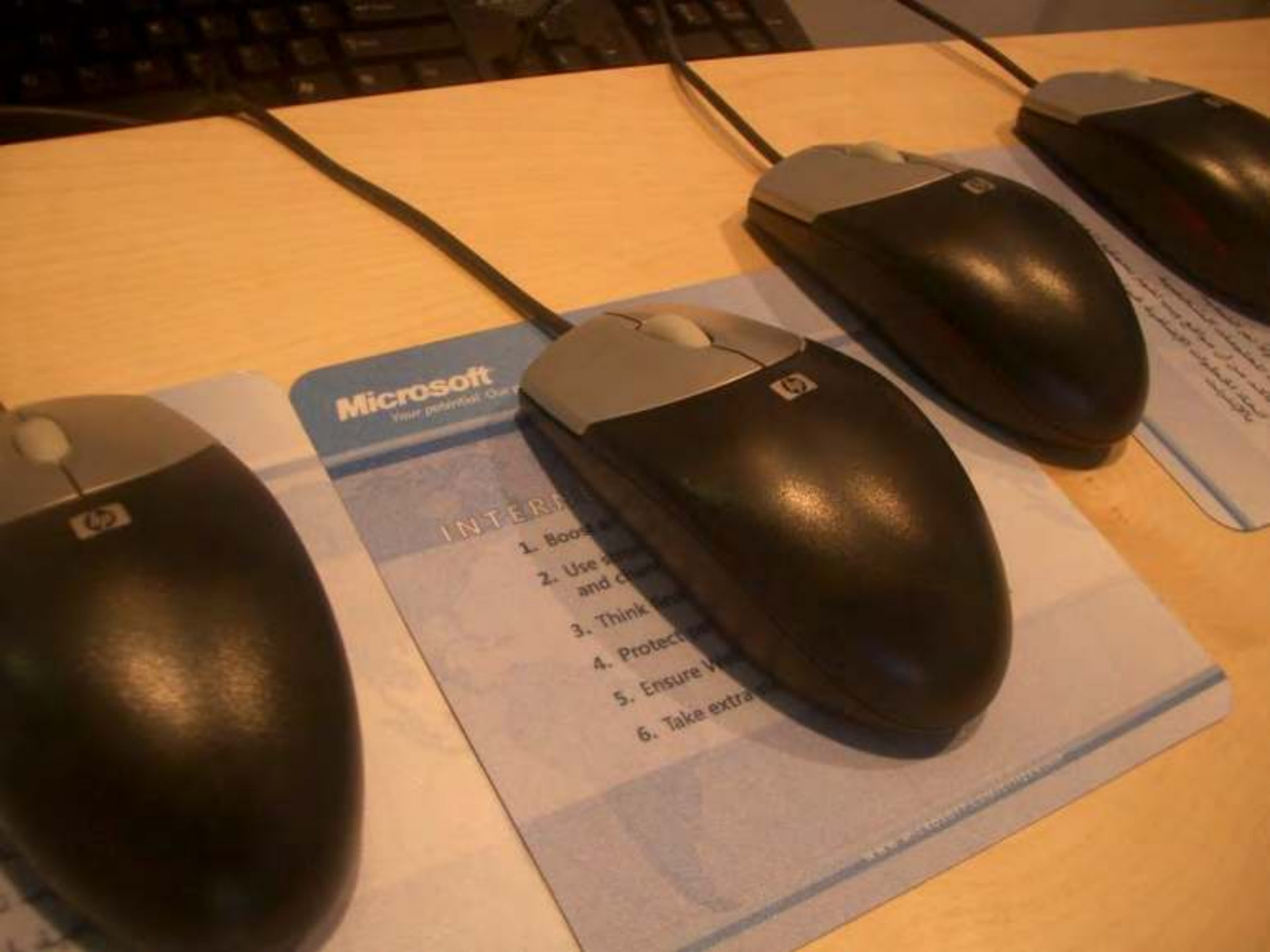
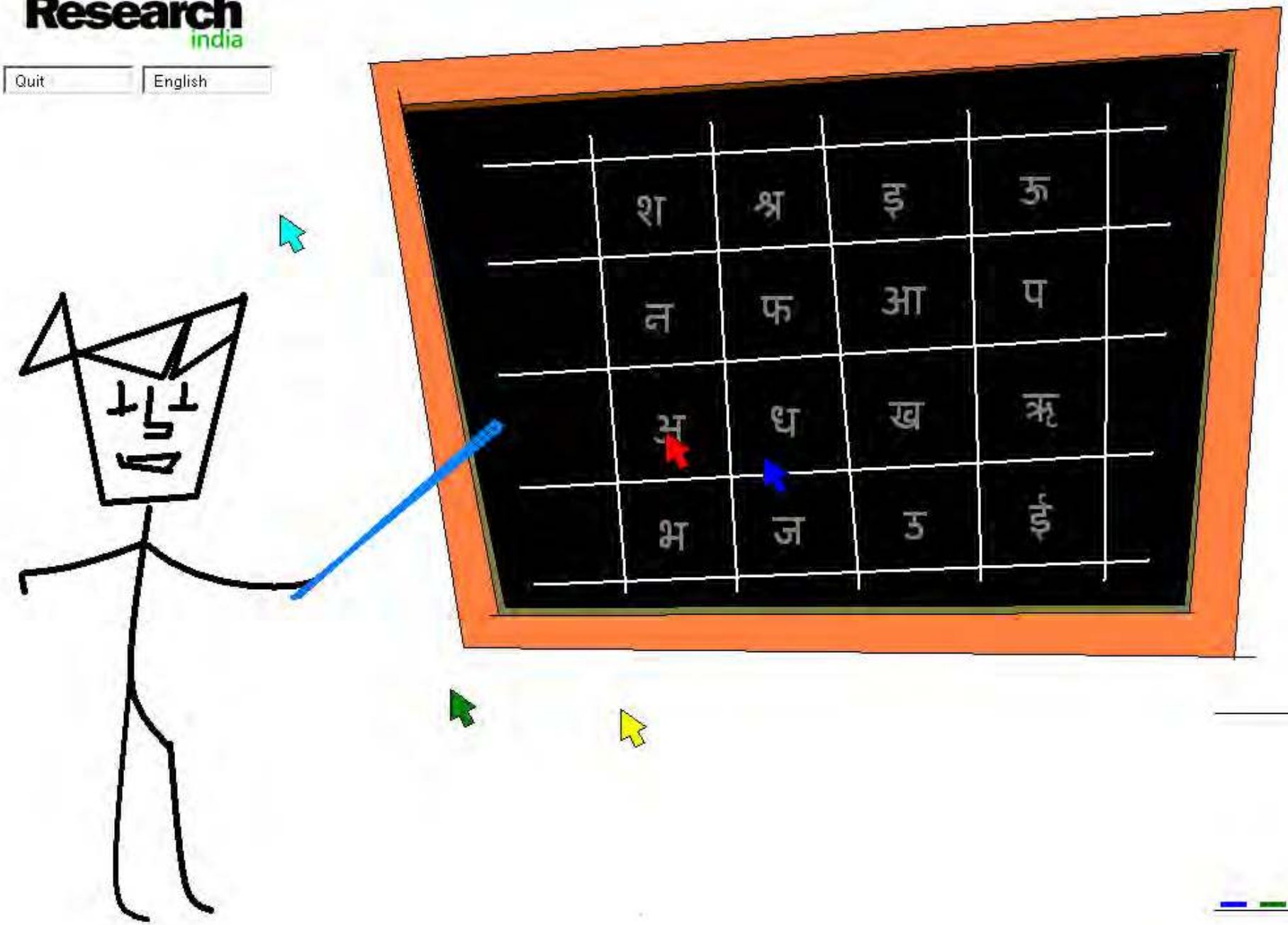
Photos: Joyojeet Pal


Microsoft

Quiz Game

Microsoft Research india

Quit | English



अंक

Pawar, U.S., Pal, J., Gupta. [illegible] for Retention Tasks in [illegible] *Proceedings of ACM **CHI 2007***.

Pawar, U.S., Pal, J., Gupta, [illegible] and To[illegible]. Multiple Mice for Retention Tasks in [illegible]. In *Proceedings of* ***ACM CHI 2007***.


Photo: Rajesh Veeraraghavan

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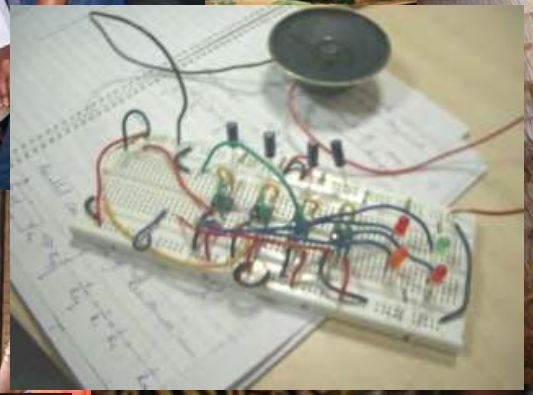

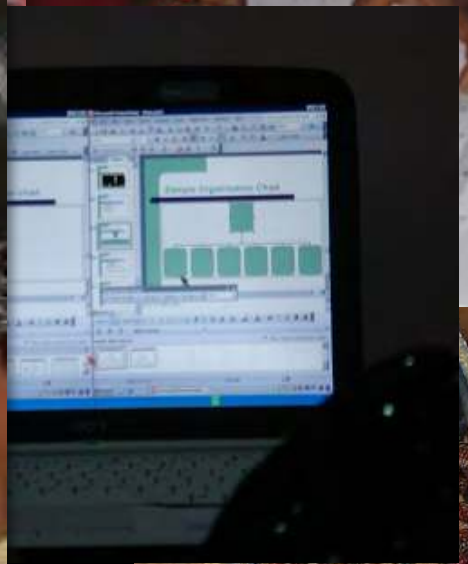

The Matrix	Facebook
Advanced technology	Advanced technology
harvests human energy	harvests human attention
to feed machine masters	to feed shareholders
while offering illusion of pleasant life.	while offering illusion of pleasant social life.

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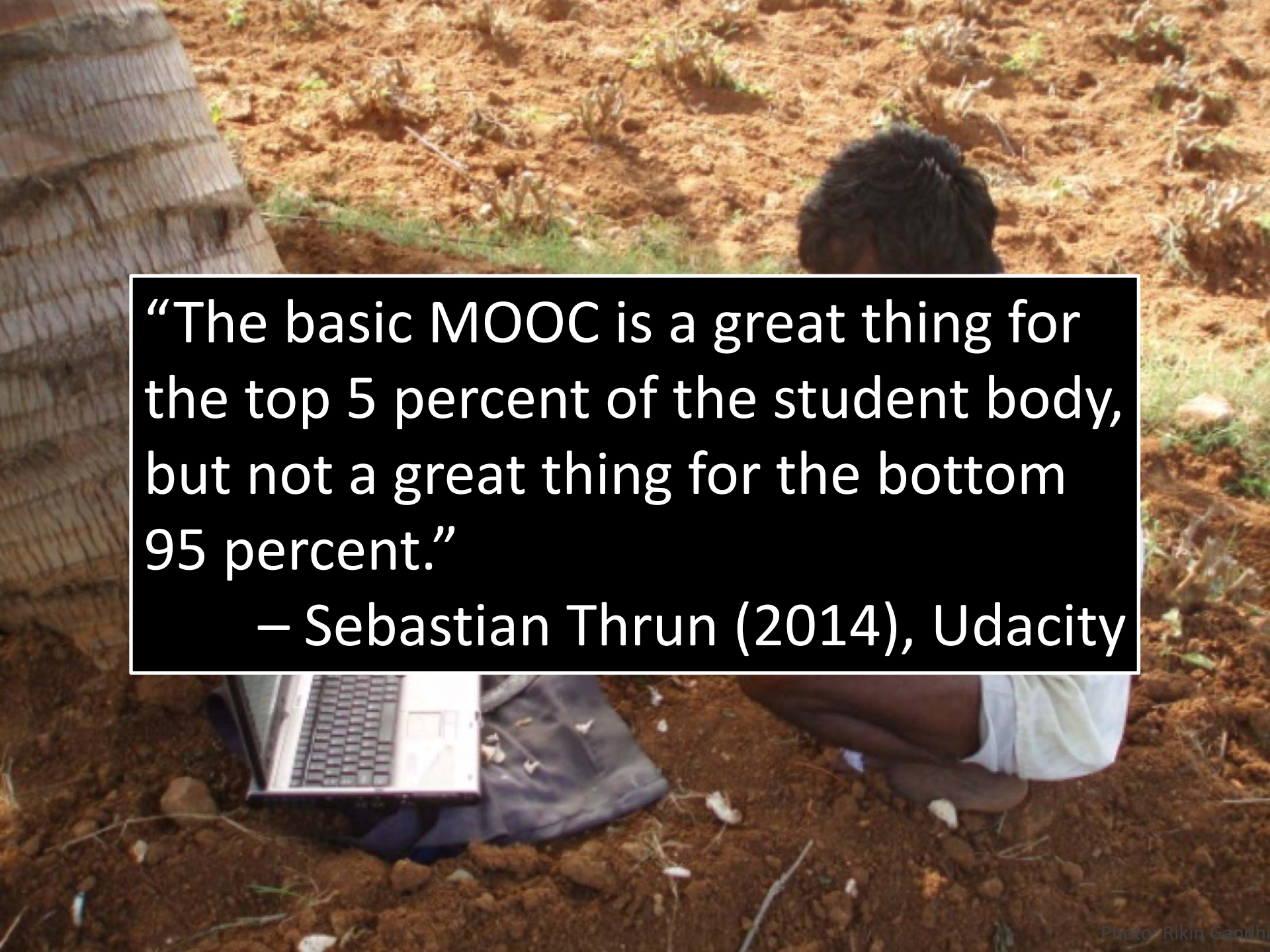
Imagine you are the chair of the lowest-ranked program in the country for your discipline. Of the following options, which is most likely to improve your department's standing?

a) Poach strong faculty from top schools.
b) Cut distractions, and focus on your strengths.
c) Have a faculty task force devise a new strategy.
d) Buy the latest iPads for all faculty and students.
e) Provide intelligent software to your grants office staff.
f) Use a data dashboard to track department activity.


“The basic MOOC is a great thing for the top 5 percent of the student body, but not a great thing for the bottom 95 percent.”
– Sebastian Thrun (2014), Udacity
Photo: Rikin Gandhi

"We can prov world-clas ourses to everyone, every ere, regardless o cial status or income, while also improving on-campus education."

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Source: https://www.forbes.com/sites/rahimkanani/2014/06/21/edx-ceo-anant-agarwal-on-the-future-of-online-learning/#5a5418481016

“The basic MOOC is a great thing for the top 5 percent of the student body, but not a great thing for the bottom 95 percent.”

-- Sebastian Thrun (2014), Udacity

“Large-scale, ‘low-touch’ learning platforms will have sectors and niches where they are very useful and others where they are less so.”

-- HarvardX and MITX (2015)

“[The] sweet spot for MOOCs is far less inspirational and compelling. The courses have become an important supplement to classroom learning and a tool for professional development.”

-- Jeffrey Selingo (2014), author of *MOOC U*

Sources: http://papers.ssrn.com/sol3/papers.cfm
http://www.nytimes.com/2014/11/02/education/edlife/demy

Claim: “Within developing countries, tangible career benefits are most likely to be reported by people with lower levels of education and lower socioeconomic status.”

Data: “Less-advantaged groups are more likely to report educational benefits. Eighty-seven percent of non-student education seekers from non-OECD countries report educational benefits compared to 80% from OECD countries; 91% with low socioeconomic status report educational benefits, compared to 86% with high socioeconomic status; and 92% without a post-secondary degree report educational benefits, compared to 86% with a post-secondary degree.”

-- Chen Zhenghao et al. (2015), *Coursera / UPenn / UW*

Flaw: These studies don’t take into account that along each dimension, a proportionally much smaller – and self-selected – fraction of the less advantaged groups take MOOCs in the first place, compared with more advantaged groups. The comparisons that should be made are among people reporting educational benefits from MOOCs *as a proportion of the total population in each category.* If these proportions were taken into account, MOOCs would be seen to have *even more unequal impact* than currently reported, because, for example, people with bachelors’ degrees are a minority in the population, even as a larger proportion of them make up MOOC students.

Sources: https://hbr.org/2015/09/whos-benefiting-from-moocs-and-why

In which of the following countries is democratic free speech most available online for faculty and students?

a) North Korea
b) China
c) Russia
d) United States


Photo: http://www.zerohedge.com/news/2014-12-22/north-korea-warns-attacks-against-white-house-pentagon-and-entire-cesspool-te

“Informati orks ar ng governments re accounta .”

– Hillary Clinton (2011)

Source: Clinton, Hillary. (2010). Remarks on Internet Freedom. http://www.state.gov/secretary/rm/2010/01/135519.htm
Photo:http://www.northcountrypublicradio.org/news/npr/174858681/o -birthday-is-twitter-still-the-free-speech-party

You and a randomly chosen first-year undergraduate student are each asked to raise as much money for the research project of your choice, and to do so using free, unlimited, high-bandwidth access to the Internet over the period of one month.

Who would be able to raise more money?


CLINTON GLOBAL INITIATIVE

“Th million [people]
ney than the
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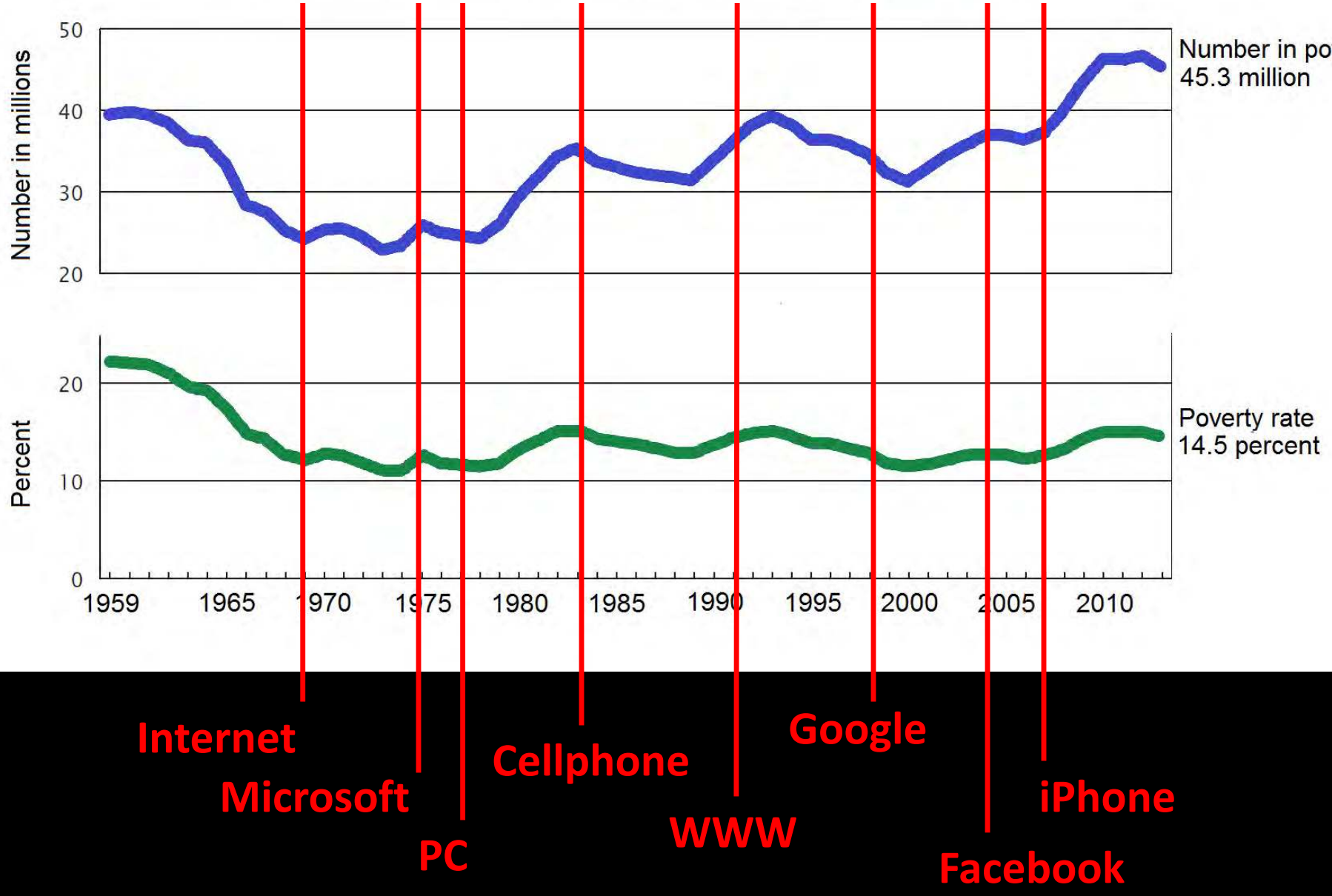
nat by everyone
ne.”

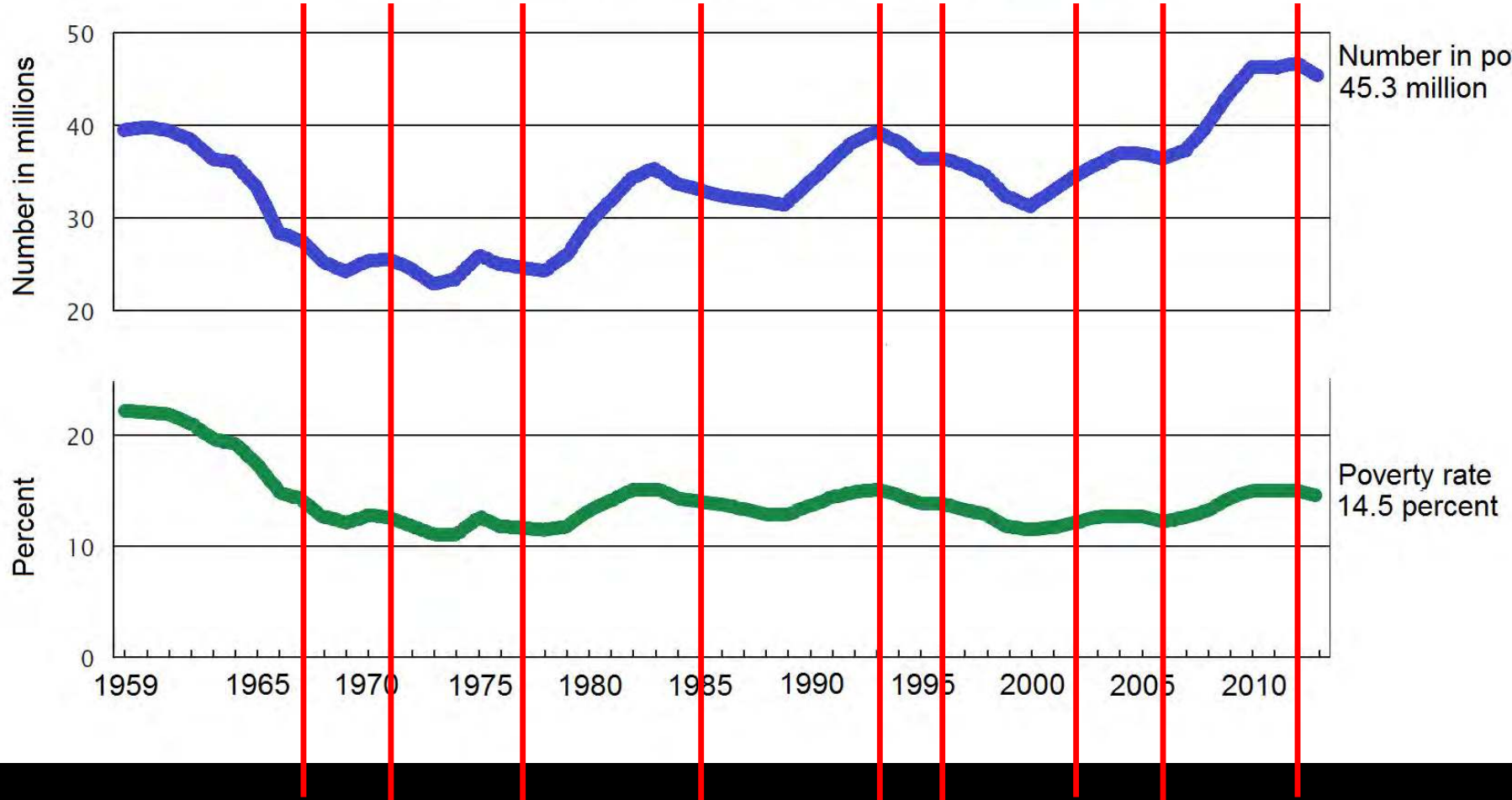
– Mark Zuckerberg (2015)

Source: http://www.wired.com/2013/08/mark-zuckerberg-internet-org/
http://www.nytimes.com/zuckerberg-tells-mobile-carriers-internetorg-will-get-people-paying-data-once-they-1833250

U.S. Poverty Rate (1959-2013) and Digital Technology



U.S. Poverty Rate (1959-2013) and Digital Technology



Logo

Project Gutenberg

Apple II

Geometry Tutor

Mosaic Browser

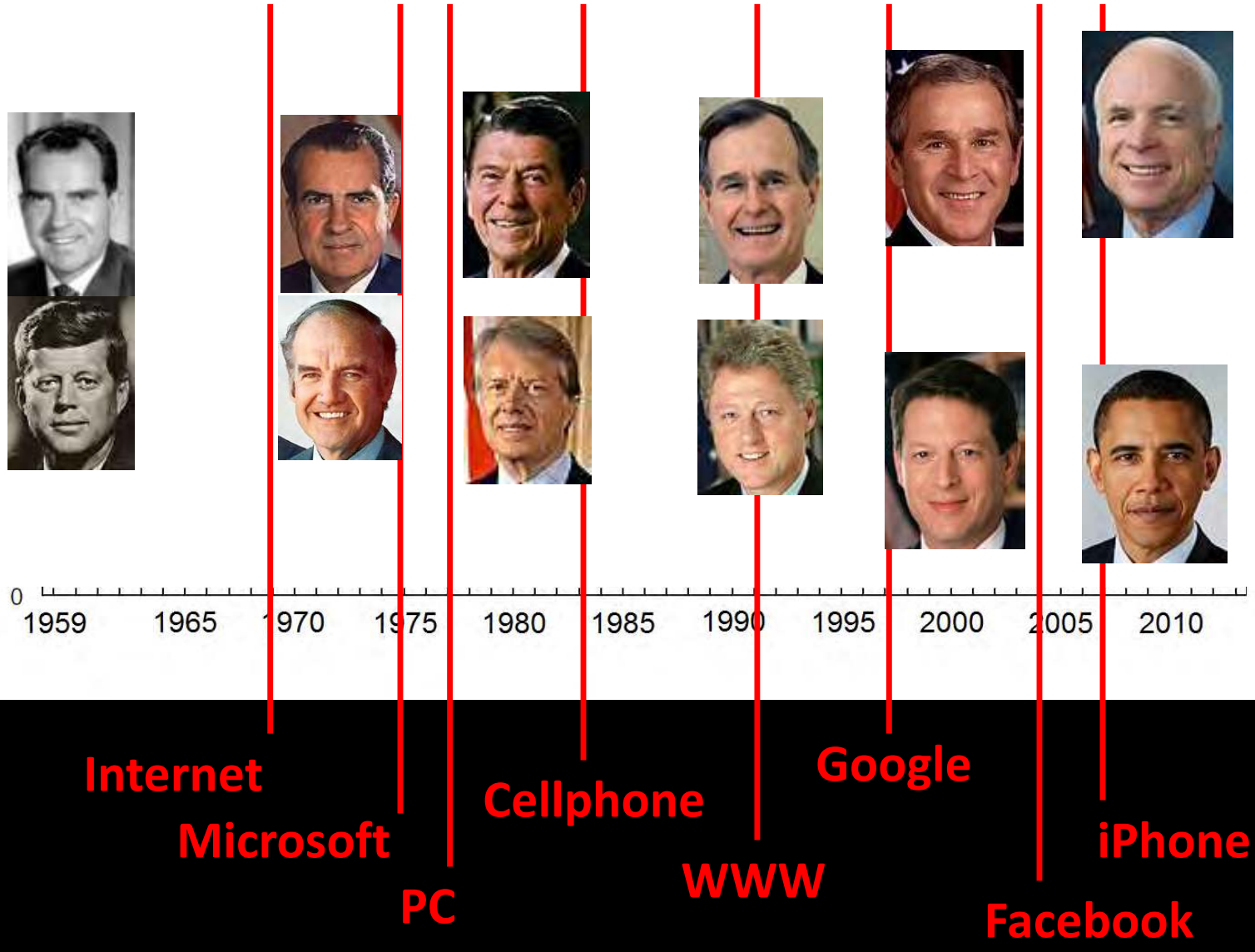
PageRank

Scratch

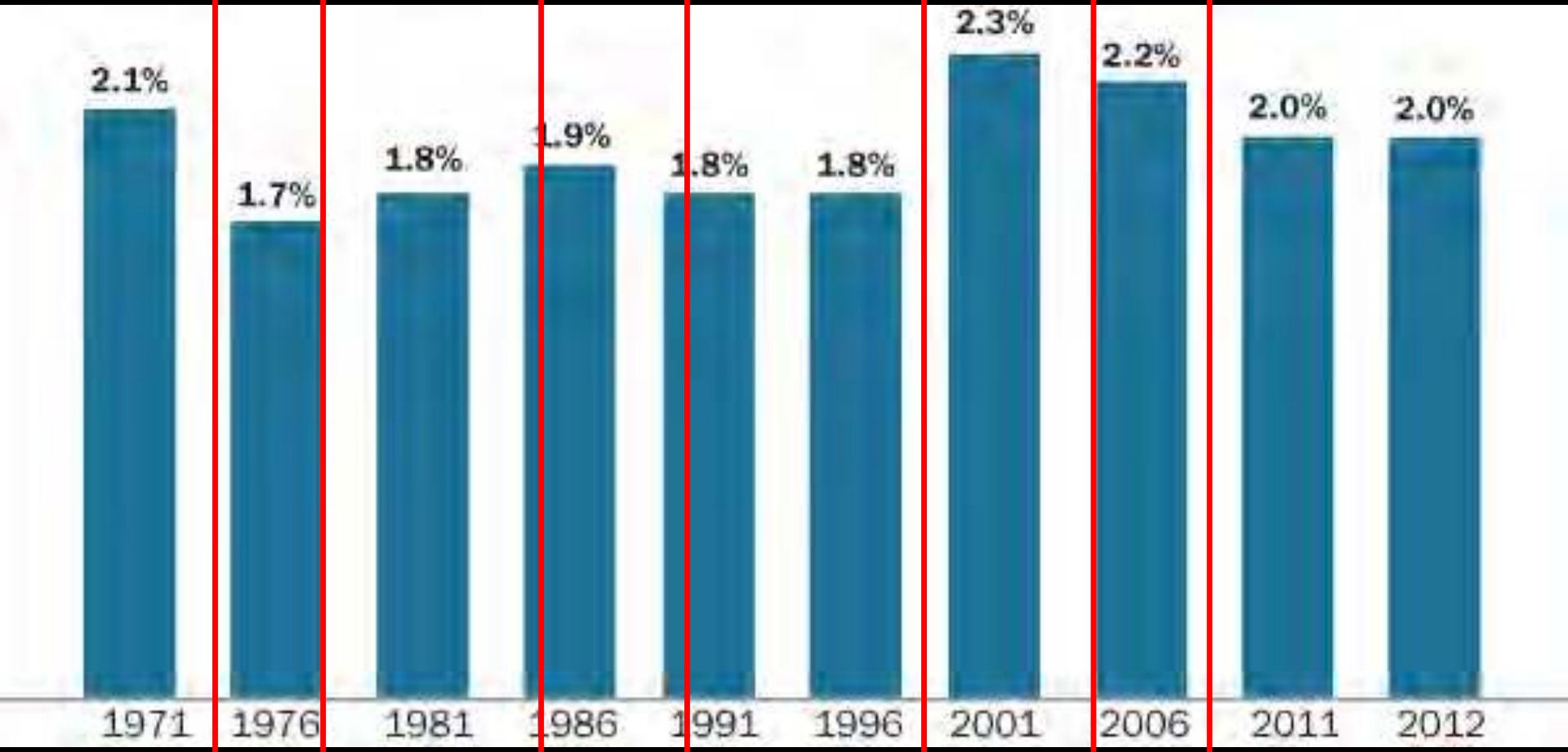
Khan Academy

Coursera

Political Polarization in the U.S.A.



Rate of Charitable Giving in the United States as Percentage of GDP (1971-2012)



Microsoft

PC

Cellphone

WWW

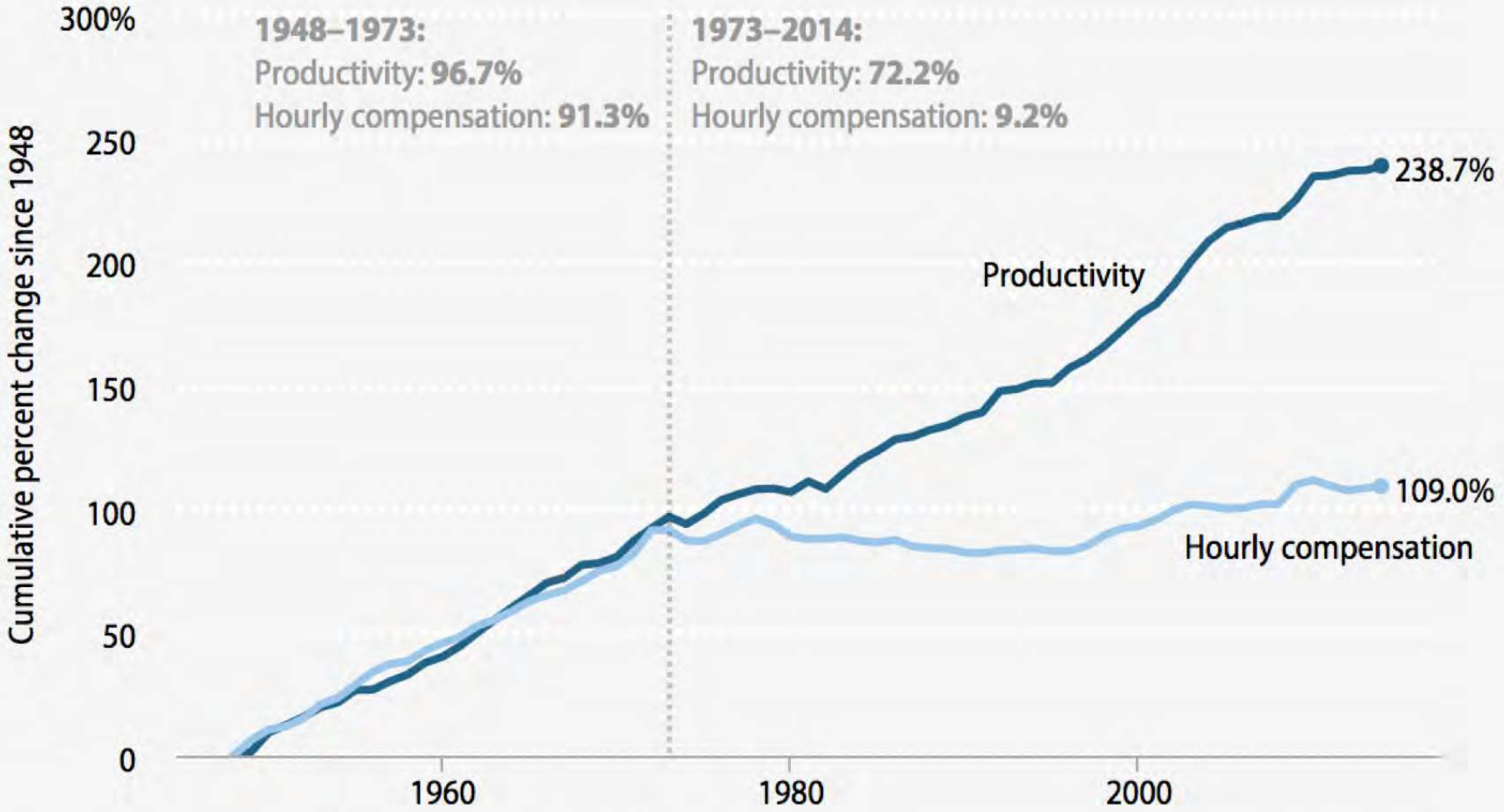
Google

Facebook

iPhone

Source: https://www.philanthropy.com/article/The-Stubborn

Disconnect between productivity and a typical worker's compensation, 1948–2014



Note: Data are for average hourly compensation of production/nonsupervisory workers in the private sector and net productivity the total economy. "Net productivity" is the growth of output of goods and services minus depreciation per hour worked.

Source: http://blogs.wsj.com/economics/2015/09/08/inside-the-fight-over-productivity-and-wages/

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For the most part, technology ***amplifies*** underlying human forces.

This is not anti-technology.
It is anti-technology-hype-and-delusion.

Technology has positive impact (only) when amplifying social trends or institutions that are already positively inclined.

Challenges requiring deep human change do not have technology-centric solutions – e.g., motivating students beyond their natural level of motivation.

Reducing socio-economic inequality has no technology-centric solutions – in a societal context favoring inequality, technology only amplifies inequities.

For the most part, technology ***amplifies*** underlying human forces.

Teacher: Desire and capacity to teach well.

Student: Motivation to work hard to learn, *relative to* motivation to do other things.

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On non-task-focused laptop use in class

"Students engaged in off-task computer activities for nearly two-thirds of the time" in a large class lecture.
Ragan, E. D., Jennings, S. R., Massey, J. D., & Doolittle, P. E. (2014). Unregulated use of laptops over time in large lecture classes. Computers & Education, 78, 78-86.
https://www.researchgate.net/profile/Peter_Doolittle/publication/263284718_Unregulated_use_of_laptops_over_time_in_large_lecture_classes/links/546a0f9f0cf20dedafd37f8e/Unregulated-use-of-laptops-over-time-in-large-lecture-classes.pdf

Allowing laptops in class reduced exam scores by 0.18 standard deviations.
Carter, S. P., Greenberg, K., & Walker, M. S. (2017). The impact of computer usage on academic performance: Evidence from a randomized trial at the United States Military Academy. Economics of Education Review, 56, 118-132.
http://www.sciencedirect.com/science/article/pii/S0272775716303454

Laptops hinder learning not only for students with them, but students nearby.
Sana, F., Weston, T., & Cepeda, N. J. (2013). Laptop multitasking hinders classroom learning for both users and nearby peers. Computers & Education, 62, 24-31.
http://www.sciencedirect.com/science/article/pii/S0360131512002254

Habitual multi-tasking correlates with inability to avoid distraction, and multi-taskers are even worse than non-multi-taskers at multi-tasking tasks.
Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. Proceedings of the National Academy of Sciences, 106(37), 15583-15587.
http://www.pnas.org/content/106/37/15583.long

"Students who took notes on laptops performed worse on conceptual questions than students who took notes longhand."
Mueller, P. A., & Oppenheimer, D. M. (2014). The pen is mightier than the keyboard: Advantages of longhand over laptop note taking. Psychological Science, 25(6), 1159-1168.
http://journals.sagepub.com/doi/full/10.1177/0956797614524581

On technology and other tricks in general for education

Toyama, K. (2015). The looming gamification of higher ed. Chronicle of Higher Education, Oct. 29, 2015
http://www.chronicle.com/article/The-Looming-Gamification-of/233992

"There are no technology shortcuts to good education."
Toyama, K. (2011). There are no technology shortcuts to good education. Educational Technology Debate, 8.
http://edutechdebate.org/ict-in-schools/there-are-no-technology-shortcuts-to-good-education/

On MOOCs

MOOCs are not addressingle unequal educational opportunities, even when analyzed by strong MOOC proponents.
Ho, Andrew Dean and Chuang, Isaac and Reich, Justin and Coleman, Cody Austun and Whitehill, Jacob and Northcutt, Curtis G and Williams, Joseph Jay and Hansen, John D and Lopez, Glenn and Petersen, Rebecca, HarvardX and MITx: Two Years of Open Online Courses Fall 2012-Summer 2014 (March 30, 2015).
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2586847

"The sweet spot for MOOCs is [as] supplement to classroom learning and a tool for professional development."
Selingo, J. J. (2014). MOOC U: Who is getting the most out of online education and why. Simon and Schuster.

Should I ban laptop use in class?

When you peek over the shoulder of a student with a digital device in class, which of the following are they most likely to be doing?

a) Paper revision
b) Math problems
c) Online shopping
d) Facebook

Should I ban laptop use in class?

No, if you experimenting with new learning technologies and are willing to invest the time to adapt your pedagogy and curriculum.

Yes, if you do *not* have time, energy, or desire to integrate new technology into your teaching style and curriculum.

Of course, if a specific activity requires specific technologies, students should be allowed to use them.

Either way, good teaching still depends on good teaching

Is teaching-trick-X (e.g., clickers, gamification, flipped classrooms, blended learning, etc.) worth considering?

Do you believe there currently exists a way in which training PhD students could be substantially more efficient or scalable with little or no additional effort by faculty?

a) Yes
b) No

Socrates and his students: Painter: Johann Friedrich Greuter, 1590: (San Francisco, Achenbach Foundation for Graphic Arts)

Is teaching-trick-X (e.g., clickers, gamification, flipped classrooms, blended learning, etc.) worth considering?

Yes, if you genuinely want to teach better, will invest the time to understand its strengths and weaknesses, and will integrate it thoughtfully.

No, if you're hoping for a quick fix to otherwise mediocre teaching.

As we all know, *there are no shortcuts*.

As a residential program, should we fear MOOCs?

What kind of university would you prefer to send your own children? A school with…

a) No teachers, advanced technology
b) Bad teachers, no technology
c) Bad teachers, advanced technology
d) Good teachers, no technology
e) Good teachers, some technology
f) Good teachers, advanced technology

Photo: RaviGa - http://www.panoramio.com/photo/23200149 ; http://www.emersonwaldorf.org/

As a residential program, should we fear MOOCs?

Yes, if you are struggling with enrollment otherwise. Though, the real challenges are probably less MOOCs and more other trends in higher education.

No, not if you are running an effective residential program. Doubling down on what is unique to residential learning is worthwhile.

However! Residential programs should all be concerned about low-cost, employer-supported *assessments*.

Summary

Technology ***amplifies*** underlying human forces.

There is no substitute for a good teacher in education.

Good teachers *who want to use technology* should use them to amplify their pedagogy.

Others (i.e., mediocre teachers or good teachers who don't want to use technology) should not.

Thank you!

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